

TECHNOLOGY

REVIEW *December* 1952



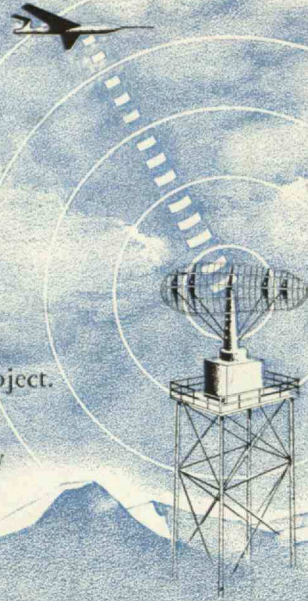
technology review

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Pioneers in Precision

Bendix Aviation Corporation engineers pioneered Radar and originated the concept of its use in intercepting and tracking a moving object. Many remote control, remote indicating systems, and other highly specialized devices on the security regulations list, are current products of this Pioneer in Precision.



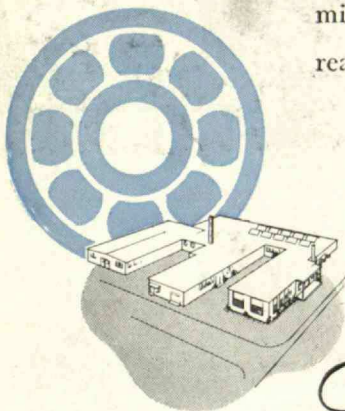
Miniature Precision Bearings

incorporated, are the originators and pioneer manufacturers of precision ball bearings in miniature sizes. The original concept of practically every new development in this field has been by **MPB**; the pioneer in designs and dimensions now being internationally standardized.

More than 120 types and sizes are regularly supplied in 10 design series, ranging from 1/10" o.d. **MPB** ball bearings are fully ground, lapped, honed and/or burnished to ABEC 5 tolerances or better. Exclusive, exacting finish and inspection details assure highest quality bearings—quality which has prompted more than a million applications. **MPB** ball bearings can be supplied in specific clearances and graded within the tolerance, for prompt assembly and maximum service.

MPB ball bearings are indicated for many unusual applications involving miniaturization. Complete information and detailed engineering assistance is readily available. Write for catalog—survey sheet TR 12

Demand for our product has necessitated an extensive expansion in facilities—has prompted a continued processes development. We will soon be in a position to offer greater services to you.



Miniature precision Bearings

Incorporated

Keene, New Hampshire



"Pioneer Precisionists to the World's foremost Instrument Manufacturers"

*save
space
weight
friction*

More go per gallon

Your automobile motor has more than 200 parts. They require close to 900 precision grinding operations.

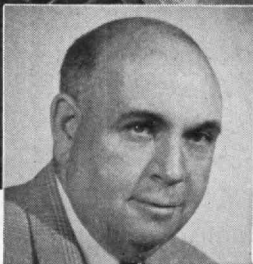
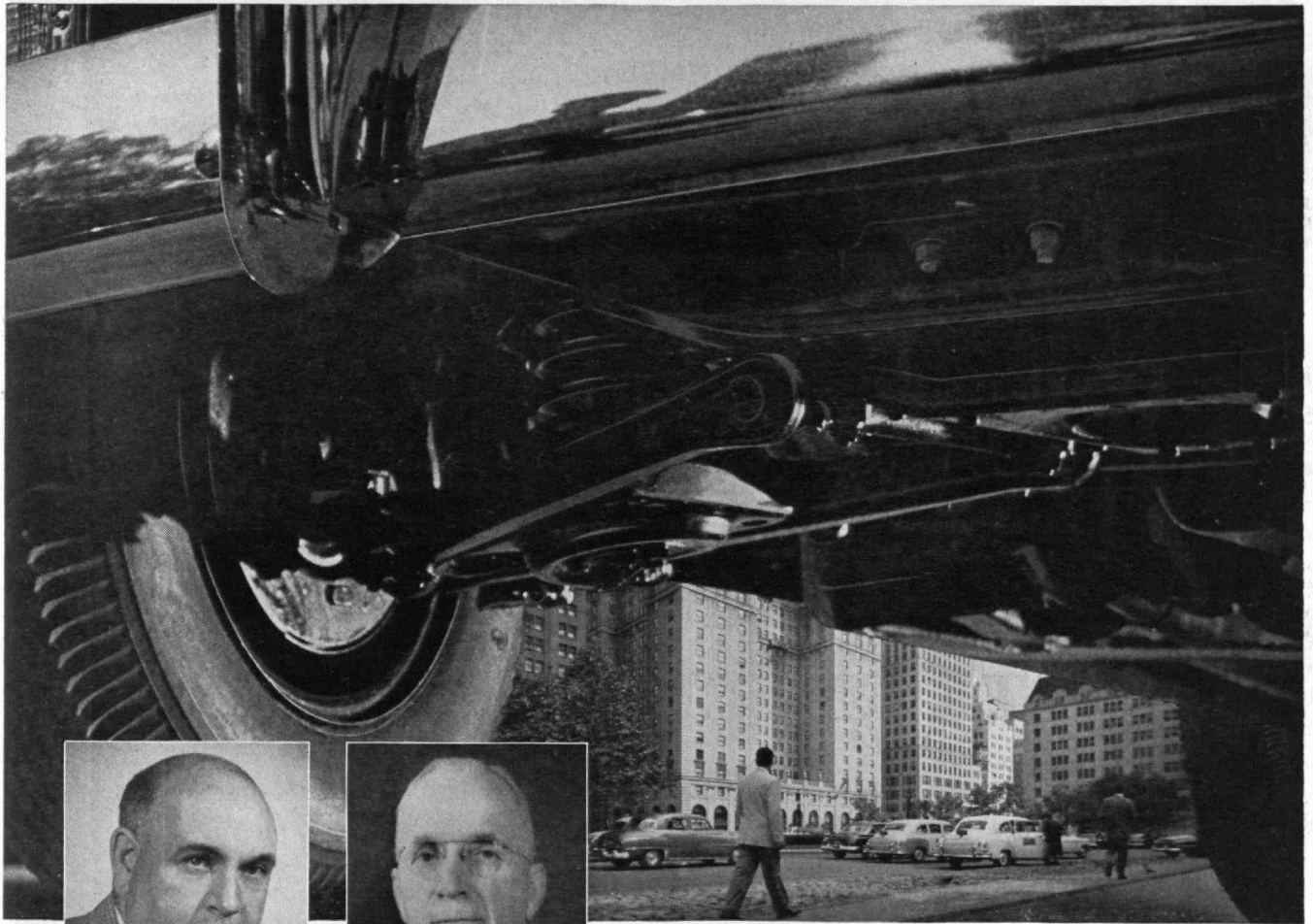
Your motor's crankshaft, for instance, must be dimensionally true within .001 inch. It gets this accuracy from Norton ALUNDUM* grinding wheels on high production Norton grinding machines. The finishing touch is given with a special Norton lapping machine, using Behr-Manning Lightning ADALOX* coated abrasive. Such true, smooth surfaces make parts fit . . . cut friction . . . give you "more go per gallon."

The automotive industry is only one of many industries which rate Norton and Behr-Manning products essential to their production. As the world's largest manufacturers of abrasives and abrasive products, Norton and Behr-Manning keep seeking better ways to help *all* industries make better products.

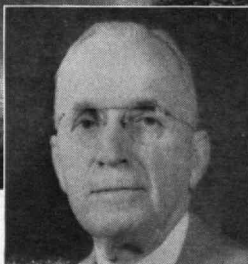
NORTON makes abrasives, grinding wheels, refractories, Norbide grain and molded products, grinding and lapping machines, non-slip floors. Norton Company, Main Office and Works, Worcester 6, Massachusetts.

BEHR-MANNING makes abrasive paper and cloth, oilstones, abrasive specialties, Behr-Cat brand pressure-sensitive tapes. Behr-Manning Corporation, Division of Norton Company, Troy, New York.

Plants, Distributors and Dealers the world over



J. HOWARD BAKER is General Superintendent of the Behr-Manning Abrasive Division. His exceptional ingenuity in 34 years' service has resulted in many outstanding improvements in the quality of Behr-Manning products.



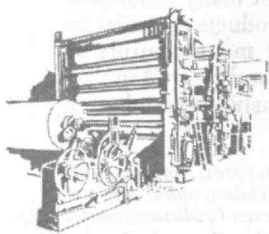
HARRY O. ANDERSON has completed 51 years with Norton. Now Chief Grain Inspector of the Abrasive Division, he has originated and patented many improvements in abrasive processing and quality control.

*Trade-Marks Reg. U.S. Pat. Off. and Foreign Countries



Making better products to make other products better

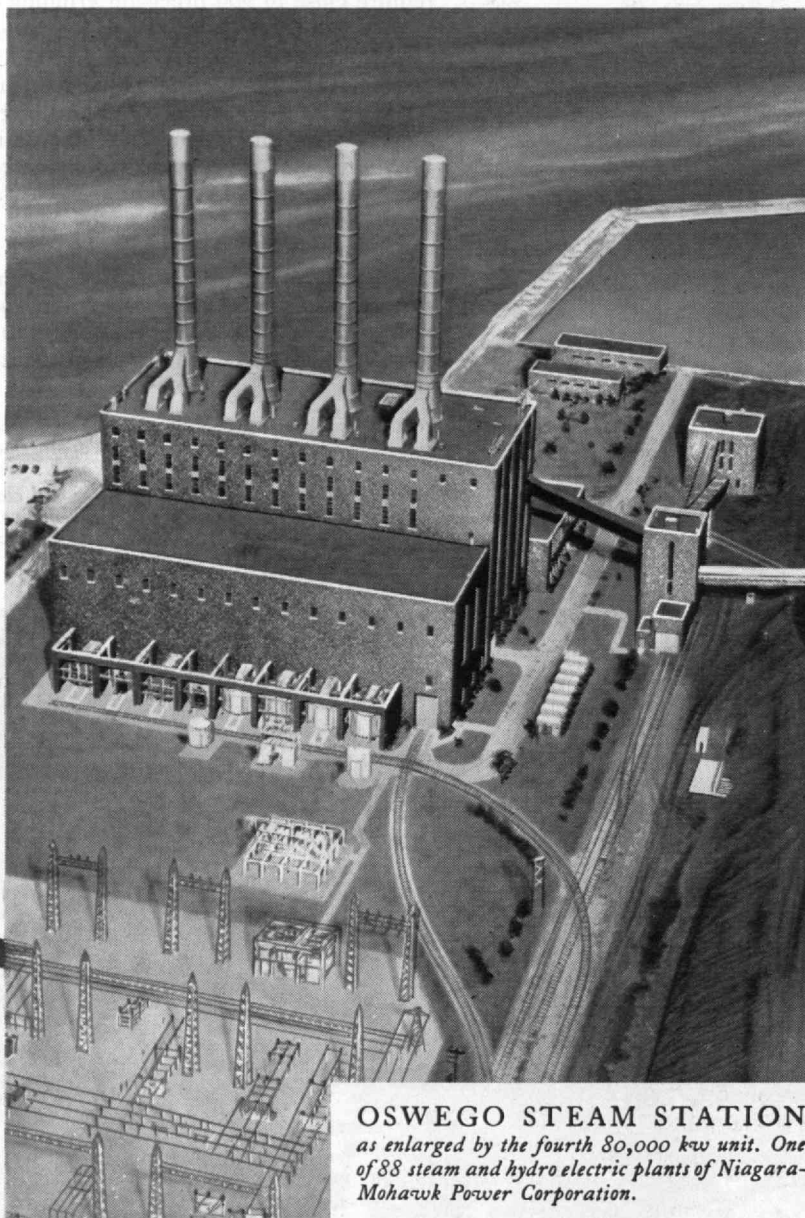
NORTON • BEHR-MANNING



NIAGARA FALLS

BUFFALO

DUNKIRK



OSWEGO STEAM STATION
as enlarged by the fourth 80,000 kw unit. One of 88 steam and hydro electric plants of Niagara-Mohawk Power Corporation.



SCHENECTADY

ALBANY

PRIVATE ENTERPRISE *In Action...*

The Niagara-Mohawk Power Corporation has 7000 circuit-miles of transmission lines and 85,000 conductor-miles of distribution lines in upper New York state. Its entire system has a rated capacity of 2,186,451 kw with 600,000 kw now under construction.

A current example of their enterprise is the Oswego Steam station, designed by their engineering department with construction supervision by Stone & Webster Engineering Corporation.

The benefits of competent business management of a privately-owned utility are again demonstrated by the Niagara-Mohawk system.



STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY of STONE & WEBSTER, INC.

NEW *Styroflex* COAXIAL CABLE

Made by Phelps Dodge in semi-flexible 1000-ft. lengths without joints

Cut-away Section of
Styroflex Coaxial Cable

Inner Copper Conductor

Styroflex Tape Helix

- Keeps inner conductor absolutely and permanently centered, even at sharp bends.
- Provides a uniform combination of solid and air dielectrics at every cross-section of cable.

Outer Belt of Styroflex Tape

- Increases leakage path between inner conductor and outer aluminum sheath.

Outer Aluminum Sheath

- Consists of continuous aluminum tube without joints.
- Acts as outer conductor.

Phelps Dodge Copper Products Corporation's new semi-flexible, aluminum sheathed Styroflex cable is specially designed to meet the need for a high-power, efficient low-loss coaxial cable in the AM, FM, TV and microwave fields. The cable reduces reflections—which cause ghost images in television and distortions in communications—to an absolute minimum.

It was developed by Felten & Guillaume Carlswerk, of Cologne, Germany, which has made a great many successful installations of the cable throughout Europe. Phelps Dodge is currently making the cable for sale in the United States in standard American sizes and impedances under a working agreement with the Cologne firm. The cable is manufactured in continuous 1000-foot lengths, without joints, and shipped on reels.

Outstanding feature of the cable is the use of insulating Styroflex film to form a helix. This helix, built up of hundreds of precision-wound Styroflex tapes, firmly supports and centers the inner conductor coaxially in an aluminum sheath at all times, assuring retention of excellent electrical properties. Essential flexibility of the Styroflex tape is obtained by special manufacturing techniques.

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CORPORATION

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But I haven't majored in
aeronautical engineering

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at full pay!



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your degree in engineering that count.

Those—plus the opportunity Lockheed is offering you—are all you need for a
career as an aircraft engineer. In Lockheed's special program for engineering
graduates, you may go back to school, or you may convert to aircraft work by
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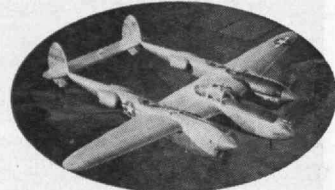
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If your Placement Officer is out of the illustrated brochures describing living and
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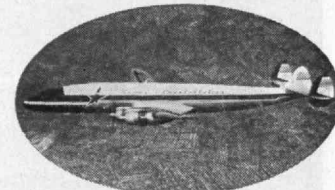
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The P-38 Lightning—first 400 mile
per hour fighter-interceptor, the
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This Plane is making History



The Super Constellation—larger, faster,
more powerful; the plane that bridges
the gap between modern air transport
and commercial jet transport.

This Plane will make History

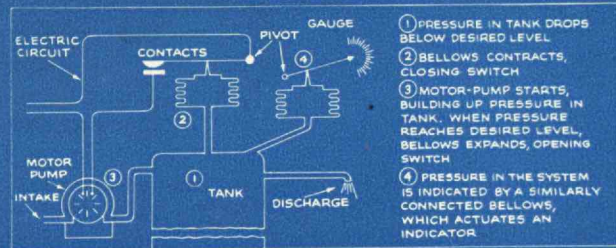
The jet of
the future—the plane
you will help create—
belongs here.

This plane—which exists only in
the brain of an engineer like yourself
—is one reason there's a better
future for you at Lockheed. For
Lockheed will always need engineers
with ideas, engineers with
imagination, engineers who build
the planes that make history.

8 Ways

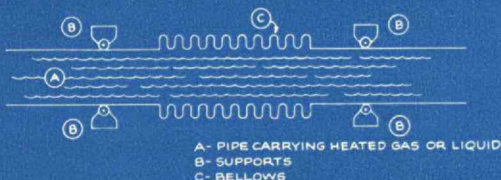
Clifford bellows help you solve design problems

Perhaps you, too, can benefit from flexible, leak-proof, metallic Clifford bellows assemblies. For individual requirements in assembling bellows to fittings, Clifford is equipped to use new molecular bonding processes, resistance welding and heliarc-welding. Write direct for complete details on how Clifford bellows assemblies can help you. Clifford Manufacturing Company, 142 Grove Street, Waltham 54, Massachusetts. *Division of Standard-Thomson Corporation.* Sales offices in New York; Detroit; Chicago; Los Angeles; Waltham, Mass.

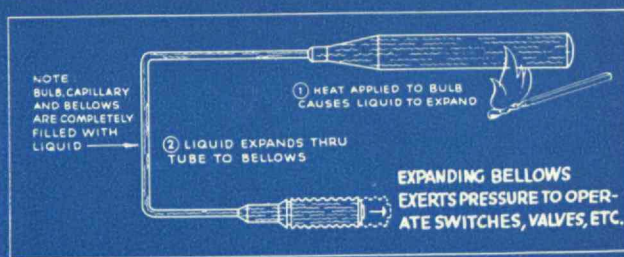


Controlling and/or indicating pressure. Clifford Hydron bellows assemblies provide close control and accurate indication in pressure systems. Pressure, exactly equal throughout the system, is immediately exerted on bellows which respond without lag. Common applications: instruments to control temperature, pressure, flow rates, liquid level.

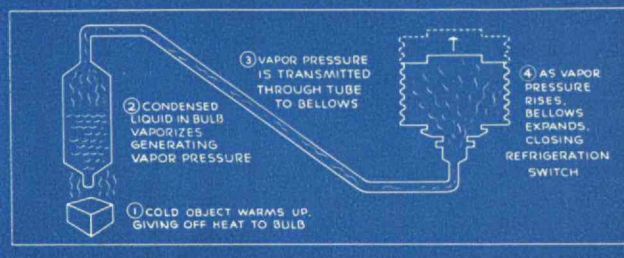
BELLWS USED AS FLEXIBLE CONNECTORS



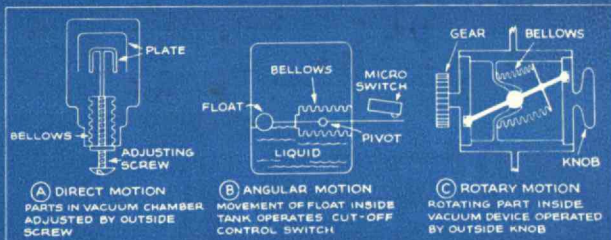
Allowing for thermal expansion in flexible piping. Clifford bellows compensate for dimensional changes caused by heated gas or liquid that would expand and buckle ordinary piping... without imposing excessive strain on supports. Sidewise movement of supports with respect to each other is also permitted.



Controlling wide range of temperature with one adjusting device. Liquid filled Clifford bellows assembly permits one knob to adjust temperatures by remote control from 200° to as high as 650° or 700°. Common applications: domestic and industrial oven controls.

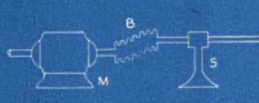


Controlling narrow range temperatures. Vapor pressure Clifford bellows system forms temperature control unit used in thermostatic devices. This device can be designed to be "fail safe" to prevent overheating even if bellows fails to function. Adjustment commonly limited to lower range than liquid filled system. Applications: refrigerator controls, auto thermostats, tank regulators.



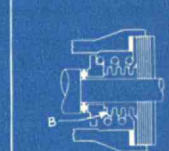
Transmitting motion from one medium to another while maintaining a hermetic seal. The inherent flexibility of leakproof Clifford Hydron bellows permits extension, retraction, rotary motion or combinations of these to be applied while hermetically sealing unit's internal elements. (A) shows direct motion, (B) shows angular motion, (C) shows rotary motion.

FLEXIBLE SHAFT COUPLING



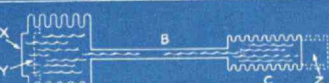
Operating as flexible shaft coupling. Clifford bellows assemblies provide constant velocity torque and compensate for misalignment.

SHAFT SEAL



Operating as shaft seal. Clifford bellows seal in gases and liquids and prevent leakage around rotating shafts.

HYDRAULIC TRANSMISSION

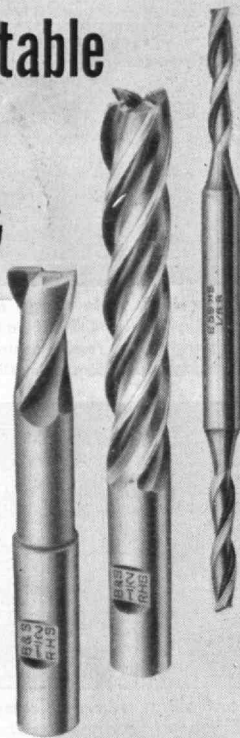


Operating in hydraulic transmission systems. Clifford bellows approximate frictionless lever-action for transmitting force in remote control systems.

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... choose the right end mill from the extensive Brown & Sharpe line. By matching the end mill to your needs, you'll get faster, more efficient, and more profitable cutting.

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BROWN & SHARPE

THE TABULAR VIEW

Metals.—For a long period of time it has been The Review's practice to devote the July issue (the last of each volume of The Review) to the exhilarating and uplifting events of Alumni Day and commencement activities. Thus the Metals Processing Laboratory failed to receive the editorial attention which the splendid new equipment and buildings warrant, although pages 500 and 501 of the July issue did report the dedication of the laboratory as a news event. A description of the new facilities appears in three articles in this issue of The Review.

First of the trio of articles (page 89) describes the laboratory building, and illustrates the assignment of space to the Department of Mechanical Engineering and the Department of Metallurgy for their respective teaching and research programs at the undergraduate and graduate levels. In the preparation of this article, the editor acknowledges with thanks the wholehearted co-operation of Robert M. Kimball, '33, and Philip A. Stoddard, '40, Director, and Assistant to the Director, respectively, of the Institute's Division of Business Administration; and the assistance of John J. Rowlands, Director of News Service, editorial associate, and perennial friend of The Review.

Machines.—When it left Boylston Street to take up new roots in Cambridge, one of the show places of the new Technology was the Machine Tool Laboratory of the Department of Mechanical Engineering. With the dedication of the new Metals Processing Laboratory, this portion of the activity of Course II, along with research in metal cutting, has been transferred to the new and greatly improved quarters, where emphasis on the science of metal working can be developed more fully than ever before. The program of teaching and research which the Department of Mechanical Engineering now conducts in the Metals Processing Laboratory is described (page 93) by PRESCOTT A. SMITH, Associate Professor of Mechanical Engineering. Following his graduation from the Institute, from which he received the S.B. degree in Mechanical Engineering in 1935, Professor Smith spent a decade in industry as equipment engineer, manufacturing engineer, methods engineer, superintendent plant engineer, and factory manager. With this wealth of practical experience, he returned to M.I.T. in 1945 where he has since been in charge of the Machine Tool Laboratory.

Metallurgy.—As the physical and chemical structure of metals and alloys is more thoroughly understood, significant advances in the casting, welding, and working of metals, as well as in powder metallurgy, occur. The program of the Department of Metallurgy in the new Metals Processing Laboratory is described (page 97) by PROFESSOR HOWARD F. TAYLOR, 2-46, of the Department of Metallurgy. Professor Taylor received the B.S. and M.S. degrees in 1936 and 1938, respectively, from Michigan State College,

(Concluded on page 76)

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EQUIPMENT FABRICATORS
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THE HALLMARK
of
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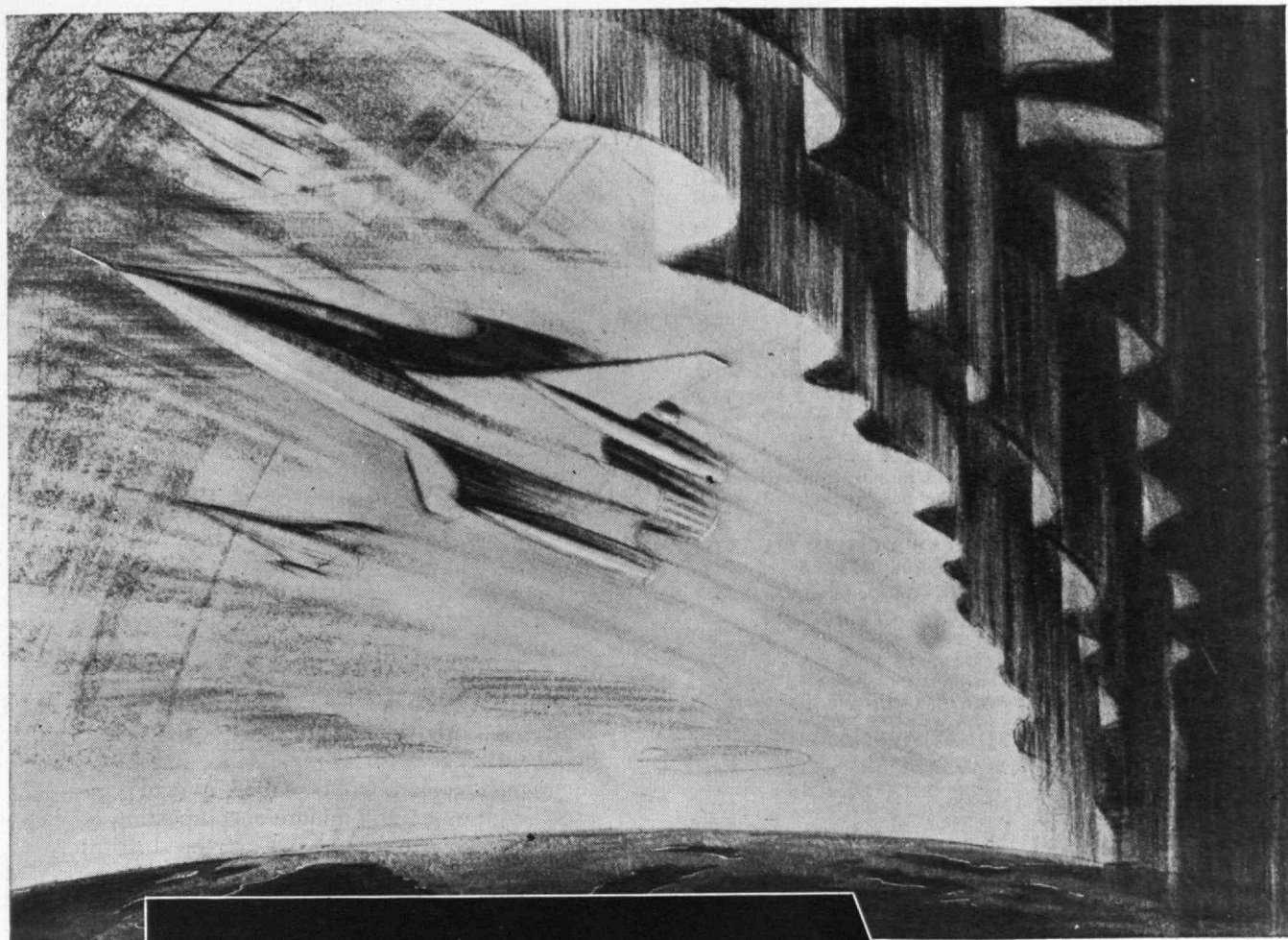
Artisan engineers and workmen are skilled in the techniques of metal working. Their combined knowledge and experience in engineering and building special equipment and machinery have been of value to many leading mechanical and process industries.

Write for a copy of "Process Equipment". For a qualified engineer to call to discuss your equipment requirements, telephone Waltham 5-6800 or write to: — James Donovan, '28, General Manager.

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BEYOND THE HORIZON....

Progress in reaction-motor propulsion becomes possible only as the metallurgist supplies new alloys to withstand the stresses, temperatures, and corrosive attack developed by new rocket fuels.

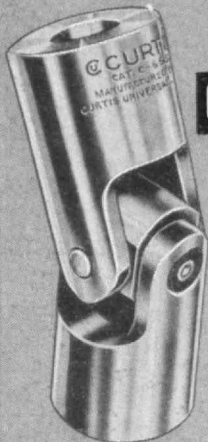
Molybdenum additions to many alloys are known to improve strength at high temperatures. For this reason Molybdenum will be used more and more in the reaction motors of the future.

Climax furnishes authoritative engineering data on Molybdenum applications.

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Availability — 14 sizes always in stock.

Simplicity — fewer parts, simpler construction.

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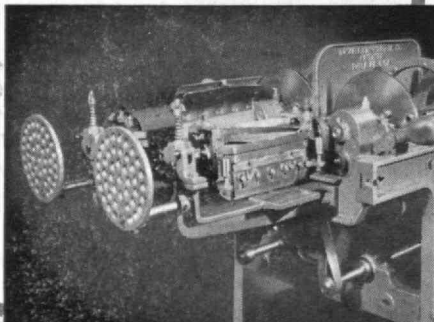


A MANUFACTURER OF UNIVERSAL JOINTS SINCE 1919



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Comparisons of production costs proves the savings made by new, improved H-D Equipment. Write TODAY for new bulletins that show economies and profits, lower unit costs, and increased production.



Shear (Clippers) on Formers



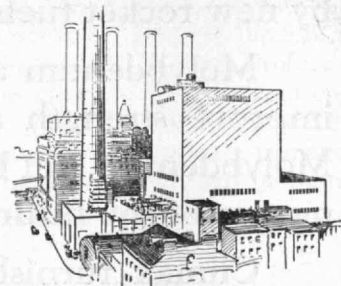
HASKELL-DAWES MACHINE CO., INC.
2231 E. ONTARIO ST., PHILADELPHIA 34, PA.

THE TABULAR VIEW

(Concluded from page 74)

and spent a year at that institution in a teaching capacity. From 1937 to 1945 he was engaged in welding and steel-casting research at the Naval Research Laboratory in Washington, D.C. Upon the conclusion of World War II, he came to the Institute as associate professor of mechanical metallurgy, and was promoted to a full professorship in 1952. Professor Taylor is the author of numerous articles in his professional field, and in this issue of The Review takes opportunity to outline the educational philosophy underlying undergraduate and graduate teaching in mechanical metallurgy at M.I.T. In 1945 Professor Taylor won the Simpson Medal, American Foundrymen's Society.

Management.—In the political campaign just ended as these words are written, both sides made a strong plea for new leadership, for high moral courage, for spiritual strength to play the leading role. A plea of the same type is made by EDWARD MCSWEENEY, '23, in his article (page 101) entitled "The Managerial Evolution." Mr. McSweeney holds that the stage is being set for a business renaissance in which professional management will be called upon to play a more exacting, a wiser, and a more encompassing role than ever before. After studying at the Institute, Mr. McSweeney was engaged in newspaper work and was subsequently affiliated with Conde Nast Publications and Butterick Publications for several years before founding his own company of management consultants, Edward McSweeney Associates, in 1933. At present he is treasurer and director of the Perkins-Goodwin Company, and a director of MacFadden Publications, Inc., Southland Paper Mills, Inc., National Heart Committee, Castleton China, Inc., and the Philadelphia Publications Corporation. He has been lecturer at New York and Northwestern Universities, and is a member of the Advisory Committee of the School of Industrial Management at M.I.T.



After we completed our work on the above building, the

CONSOLIDATED EDISON COMPANY awarded us another contract for the construction of their new generating plant in Astoria, L. I., now under construction.

W. J. BARNEY CORPORATION

Founded 1917

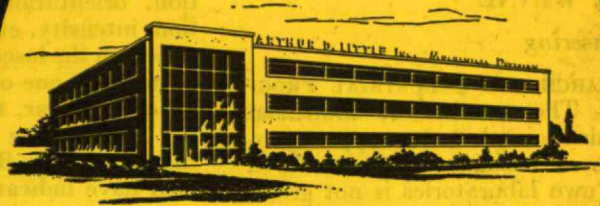
101 Park Avenue, New York

INDUSTRIAL CONSTRUCTION

Alfred T. Glassett, '20, President

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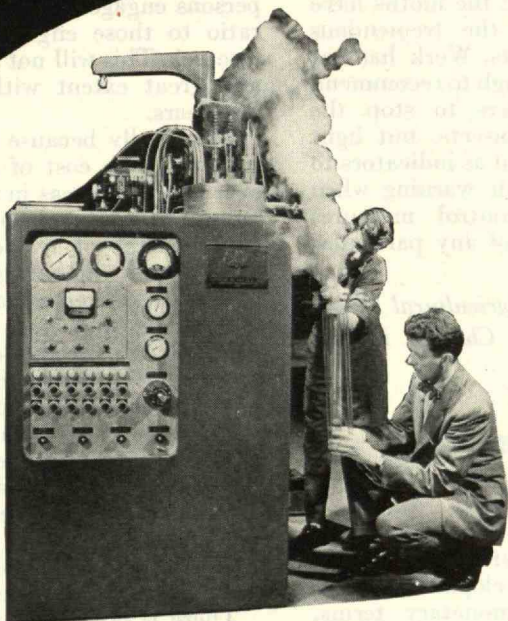
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New ADL Mechanical Division Building

... using advanced

Engineering Techniques



Liquefying helium gas to produce temperatures near Absolute Zero (minus 460°F) was one of engineering's most difficult thermodynamic problems. The ADL Mechanical Division produced the Collins Helium Cryostat to answer this problem, thereby creating a significant tool in the advancement of science.

If lack of personnel has halted development of your new ideas or new products, the ADL Mechanical Division can take over and bring them to complete maturity.

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30 MEMORIAL DRIVE, CAMBRIDGE 42, MA

What GENERAL ELECTRIC People Are Saying

H. A. WINNE

Engineering

RESEARCH AND INDUSTRIAL PROGRESS: The number of industrial organizations that can support programs of fundamental research in their own laboratories is not great, but it is important that all industry recognize the importance of this type of research and support it in every way possible.

The extent to which industry fosters the kind of intellectual environment that is essential to creative work will determine, in a large measure, the dividends from research that it may expect to receive over the next 50 years.

The trick is to see around the corner—or, failing that clairvoyant sense, to make a fair guess as to what may lie just around the corner and to play the research program accordingly.

A research program that is well integrated with the business interests of the company is as much a part of the continuous operation of the business as is the maintenance of a plant that is well adapted to company needs. Consequently the research program must be protected from interruptions that might follow minor fluctuations in the business cycle.

*Centennial Conf. on Ind. Research
Chicago, Illinois*



J. P. DITCHMAN

Lamp Division

APPLICATIONS OF LIGHT IN AGRICULTURE: Many people are working on the use of lamps and electrical traps as a means of crop insect pest control. Nothing is known of the sensation that insects experience when they see either colored or white light. Therefore, any intimation that insects have color perception should be avoided.

Literature on the movements of insects and other responses towards or away from the light sources is very fascinating because it shows that every conceivable variation of radiant energy, spectral distribu-

tion, orientation, quantity, duration, intensity, etc., may have some action on the insects or animals. Just to mention one of these with which we are familiar, the effectiveness of the light source in attracting nocturnal insects. Researchers in this field have indicated that most nocturnal insects have receivers that are sensitive to the blue and the ultraviolet part of the spectrum. This is being used to particular advantage in agricultural fields where sources of ultraviolet and visible blue are being used to attract the cornborer moth, cotton ball worm, and others to their destruction. The fluorescent black-light lamp has been so attractive in tests conducted during the last few years that the ordinary high-voltage traps being used to electrocute the moths have been clogged by the tremendous flight of the insects. Work has not progressed far enough to recommend this use to farmers to stop the scourge of these insects, but light traps are being used as indicators to give the farmer fair warning when he should use control measures against the flight of any particular pest.

*Am. Soc. of Agricultural Engrs.
Chicago, Illinois*



W. R. G. BAKER

Electronics Division

MANAGEMENT OF RESEARCH AND DEVELOPMENT: Just as the progress of research and development cannot be measured in monetary terms, neither can it be measured in terms of numbers of engineers, or physicists, or chemists. It must be measured in the extension of human knowledge, and in the application of that knowledge. The trend today is to shorten the time between the extension of knowledge and its application, a task which becomes more

difficult as we bring more important minutiae into our understanding.

There appears to be a growing recognition of the fact that time is a fourth dimension in scientific progress, and a dimension of increasing importance. The interrelation today of what were disassociated sciences yesterday is a strong indication that if the state of the art in one branch of science moves too far ahead, the expenditure of man-centuries of engineering effort may not produce marked further progress. A period of "catching-up" may well be required.

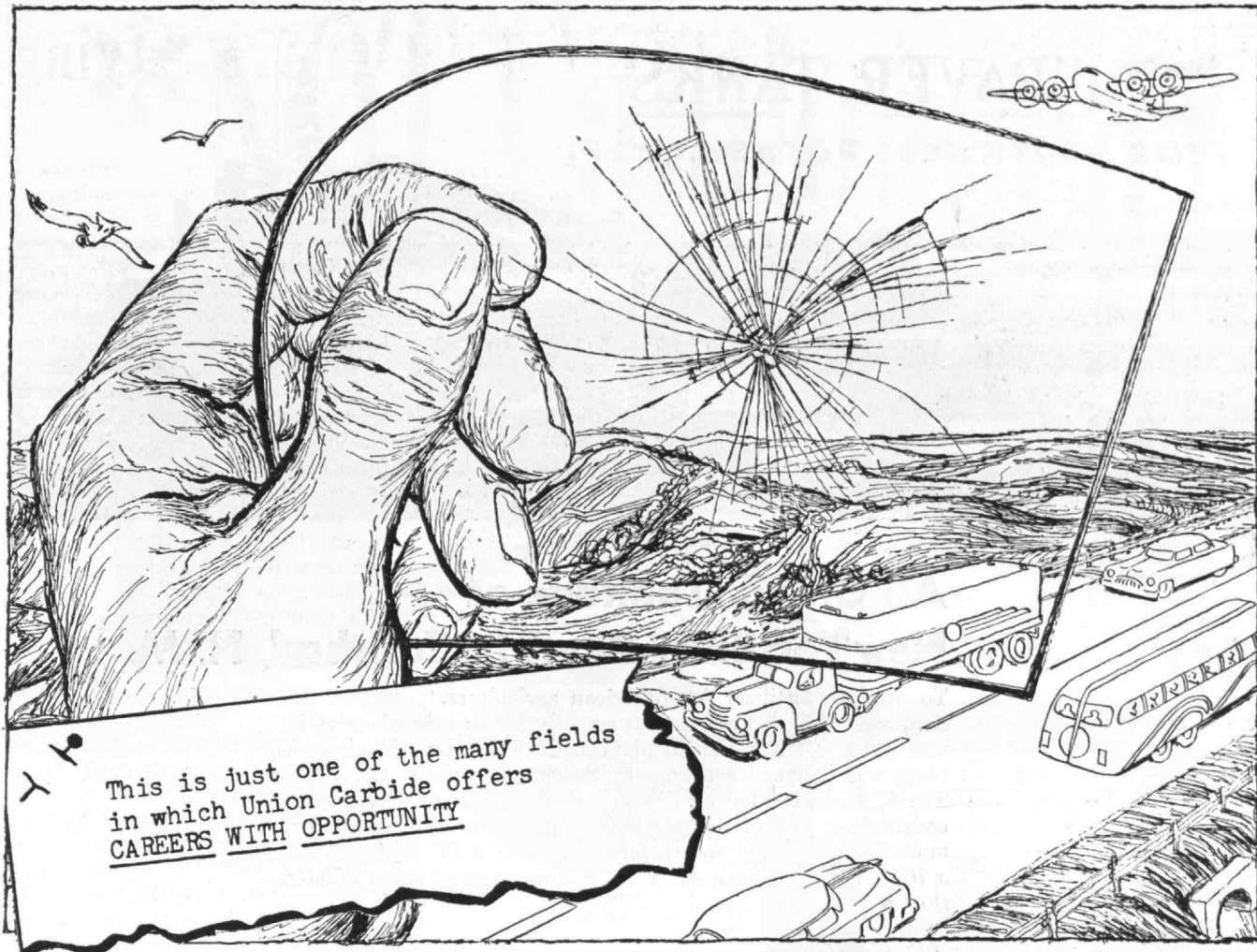
In many fields the developmental engineer is breathing down the neck of the man who is engaged in fundamental research. The obvious answer is to increase the number of qualified persons engaged in pure research in ratio to those engaged in applied research. This will not be possible to any great extent within the next few years.

Principally because of three factors: the high cost of research; the ever widening areas in which fundamental research can take place; and the shortage of trained engineers, several new operating procedures have been offered research management. The first has a variety of names such as techno-economics, or operations research. Basically this procedure is nothing more than the "task force" approach of studying all related areas, determining the extent of the new basic knowledge required, the effort needed to convert this knowledge to a usable form, the total capital investment and expected rate of recovery.

There is no reason why this approach should not be successful if those from whom you can reasonably expect progress in fundamental research, through reasons of adequate training and possession of an inquisitive mind, are available.

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No matter how you travel—by land, sea, or air—
you are protected by a sandwich of shatterproof glass

Birds flying in the airways . . . pounding waves at sea . . . emergencies on the highway or railroad—these are among the many things that can cause broken windshields and windows while you are traveling.

That's why the windshields of America's sky giants today are made to withstand hail, wind pressure . . . and collision with even an eight pound bird at the plane's cruising speed.

ELIMINATING A SOURCE OF DANGER—Today the danger of razor-sharp pieces of flying glass has been virtually eliminated. Most cars, trucks, trains, and ocean liners now have safety glass as standard equipment.

In making safety glass a sandwich of glass is made with a tough, clear plastic spread called vinyl butyral resin. It's this plastic that holds the razor-sharp pieces safely in place if the glass is broken.

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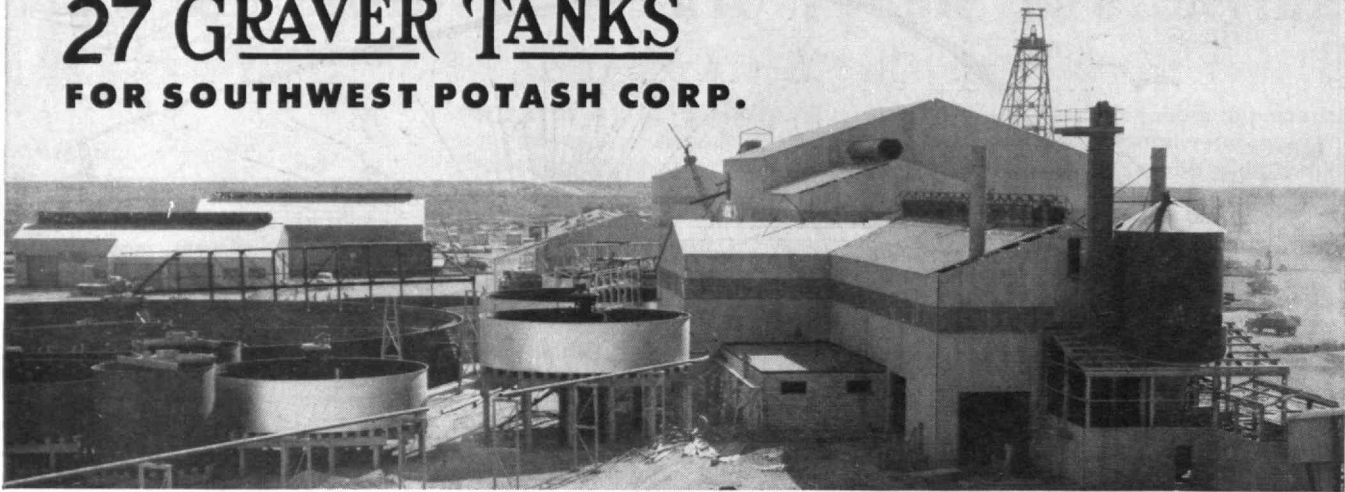
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27 GRAVER TANKS

FOR SOUTHWEST POTASH CORP.



General View of plant at Carlsbad, showing Graver process tankage.

All Graver Tankage at New Fertilizer Plant in Carlsbad, N. M.

To produce fertilizer for American agriculture, Southwest Potash Corporation recently began operations at its new \$11,000,000 mine and plant at Carlsbad, New Mexico. The plant was designed and built by Stearns-Roger Mfg. Co. of Denver. The 27 tanks erected by Graver's Banks Moreland Division constitute a part of the processing operation. Among the larger tanks for processing and storage are a 180' x 17' thickener tank, a 70' x 12' brine tank, 45' x 10' hydroseparator, and a 250-ton shift bin.

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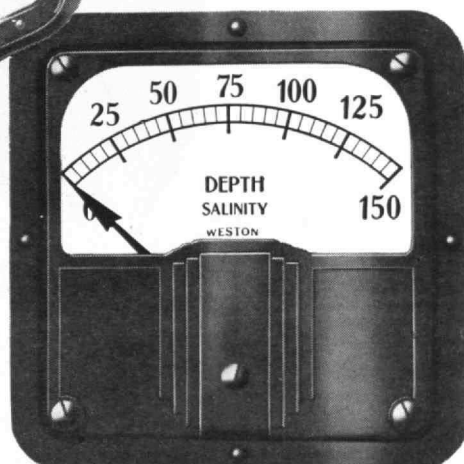
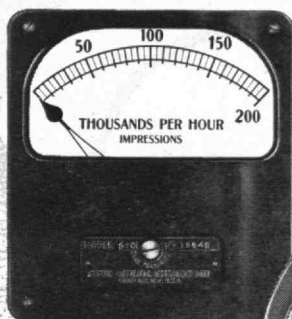
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PLUS



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PLUS 1—The only passenger-car tire in the world with an all-nylon cord body.

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PLUS 3—Safety! Over 2,000,000 miles of gruelling road tests *prove* that this is the safest tire ever designed for a passenger car!

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PLUS 5—Sensational new Resist-a-Skid Tread, an exclusive Goodyear development, grips at all angles of skid! Quicker on the start, safer on the stop! Gives safer, surer traction on wet roads, on snow—even on ice!

PLUS 6—Full, safe traction for life! Exclusive Resist-a-Skid tread design never needs re-cutting to restore its traction.

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GOOD YEAR

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Double Eagle, Super-Cushion and LifeGuard, T. M.'s—The Goodyear Tire & Rubber Company, Akron, Ohio



H. Armstrong Roberts

"Heap on more wood!—the wind is chill;
But let it whistle as it will,
We'll keep our Christmas merry still."
— Sir Walter Scott

THE TECHNOLOGY REVIEW

TITLE REGISTERED, U. S. PATENT OFFICE

EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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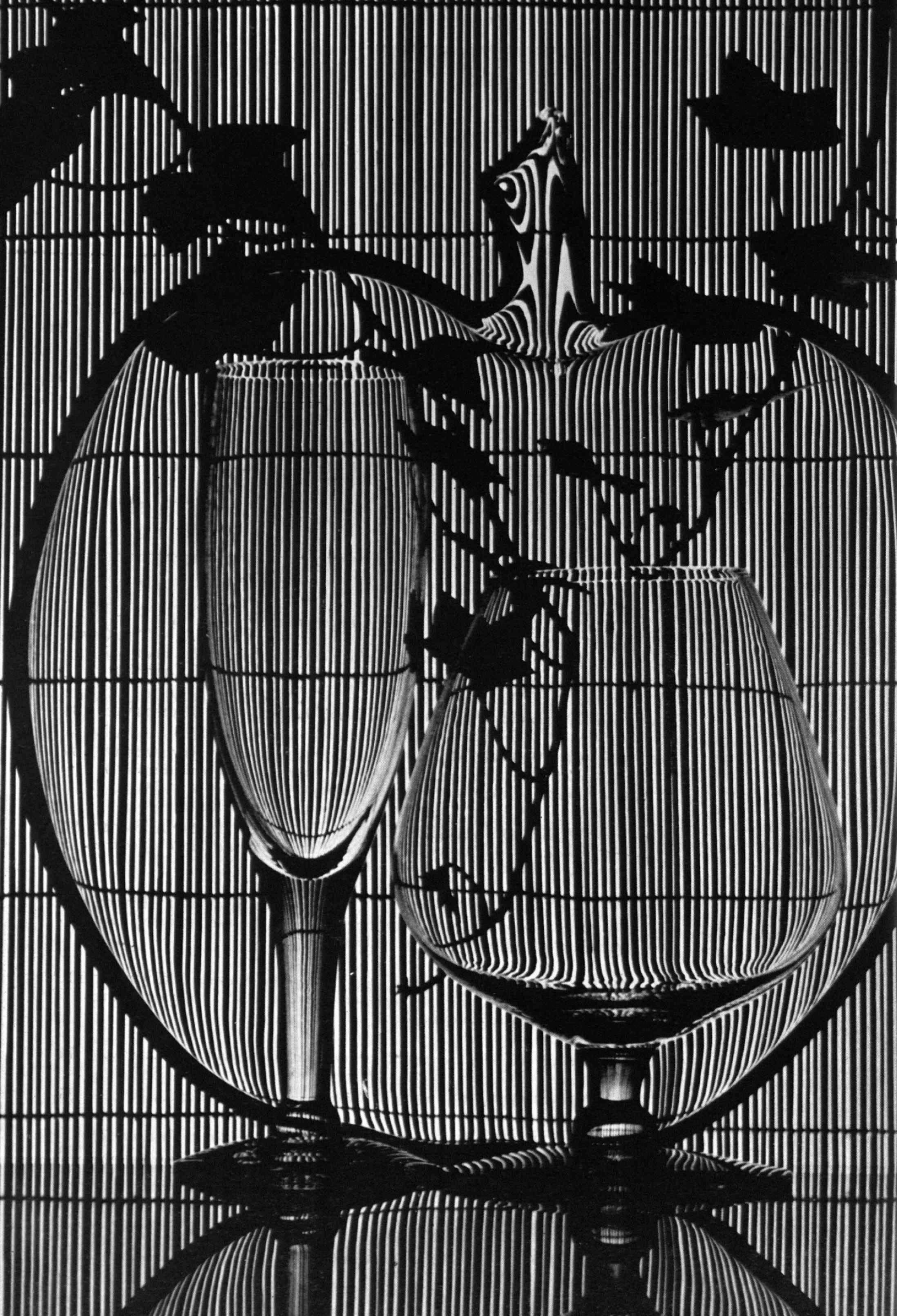
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THE TECHNOLOGY REVIEW

Vol. 55, No. 2



December, 1952

The Trend of Affairs

Big Cargoes, Big Ships

ONE of the great economic facts of the postwar era is that the United States has joined the ranks of the have-not countries in many basic materials. Added to some of the old lacks, such as bauxite and copper, are some newer and more massive ones. The United States has become a net importer of oil and iron ore, and predictions point to increasing movements of these bulk commodities into the country with the passing years. Sharply rising imports of some raw materials, particularly petroleum, have also been characteristic of Europe's economy since World War II.

A report by the Federal Trade Commission, recently released but already somewhat obsolescent, indicates that the United States production of petroleum is falling short of consumption by about 650,000 barrels per day. For Europe (except the satellites), the shortage is 1,643,000 barrels per day. The Middle East, on the other hand, has a tremendous surplus over consumption of about 2,000,000 barrels per day. All over the world, lesser, but still sizable, differences between production and consumption call for correction, through world-wide transportation.

Generally, transport can be done only by the tanker. The sharp increase in the international movement of oil that has occurred in the postwar years has been accompanied by a boom in tanker construction. About half the new construction of merchant ships in British and other foreign shipyards has been for tankers, and there have been occasions when as

much as 90 per cent of the construction in this country's yards has been in this type of vessel. With about 2,000 tankers afloat today, nearly 600 more are under construction — the great bulk of them in foreign yards.

Always among the largest and fastest of freighters, the tanker has been increasing its average size and speed quite rapidly in the postwar era. Large and fast for its time, the *T-2* tanker of World War II was listed at about 16,665 dead-weight tons, cruised at about 14.5 knots, and carried about 120,000 barrels of oil. The Maritime Administration is now considering a tanker design, the *T-5*, which it considers more suitable for the needs of a future emergency. This ship, by no means large by present standards, will be of 20,200 dead-weight tons, and will cruise at the very fast clip of 20 knots.

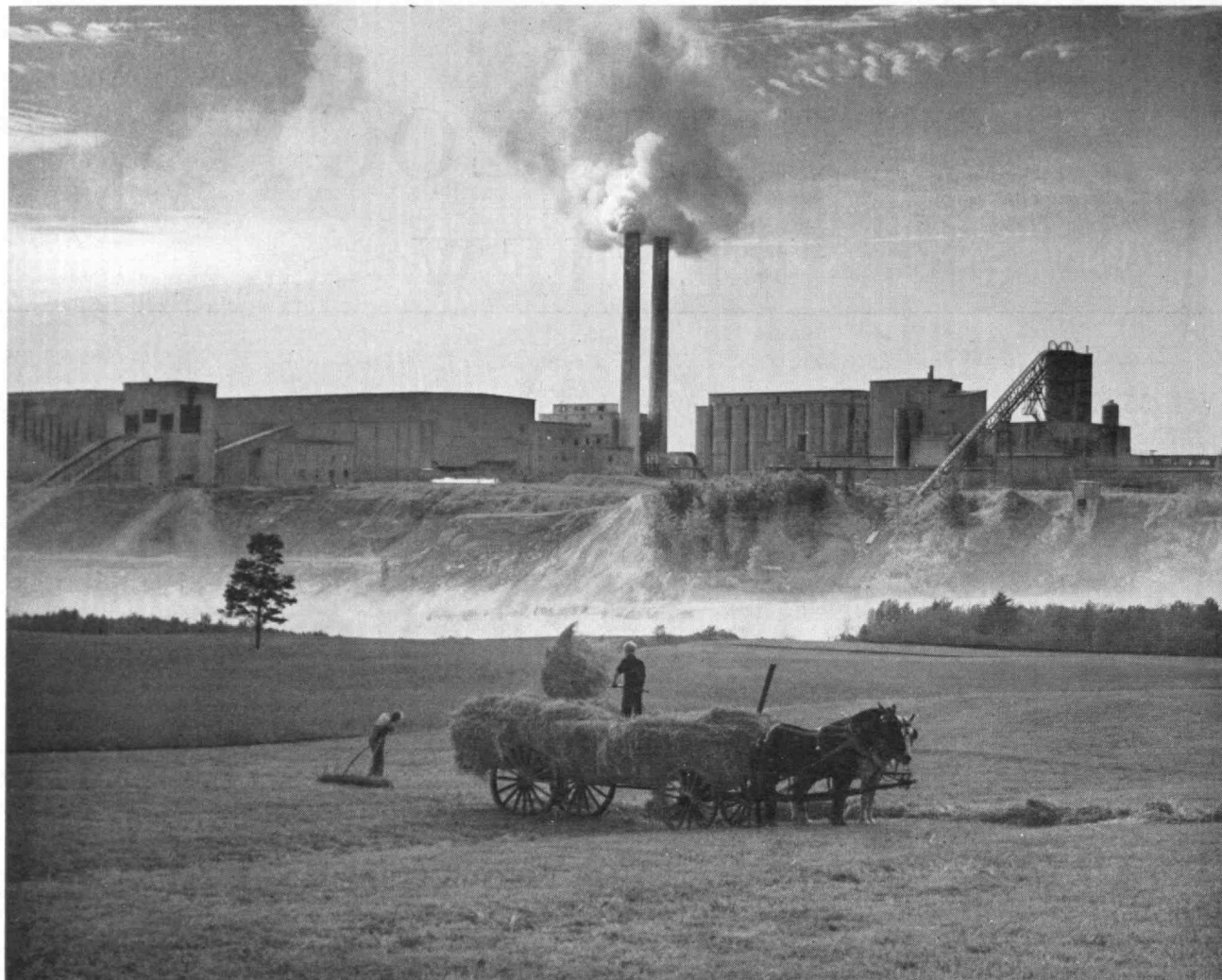
The typical American tanker being built today is bigger than the average passenger liner, and is not much slower in speed. Such a tanker might be 660 feet long, 85 feet wide, draw 34 feet when fully loaded with 258,000 barrels of oil, and displace 39,500 tons in that condition. Its engines, generally steam turbines, would produce 18,000 shaft horsepower which would be fed to a single propeller driving the tanker at about 17 knots. The *U.S.S. Independence* and *Constitution*, launched in 1951, are each 633 feet long and 89 feet wide, and do 25 knots.

The trend in size is still actively upward. Some recent tankers have exceeded 30,000 tons dead weight, and 45,000-ton tankers have been contracted for. There is talk even of 60,000-ton tankers. Such ships would be over 700 feet between perpendiculars, and probably in the order of 100 feet wide. By comparison, the *U.S.S. America*, second largest merchant ship built in the United States, is 663 feet long, 93.5 feet in beam, and draws 30.4 feet.

In view of the large and steady volume of freight available, there is basically no limit to the size of tankers except the depth of water and maneuvering

Pattern in Glass

A photographic study of silicates and chlorophyll, by transmitted and absorbed light, produced the unusual black and white effect on the opposite page. Original photograph, by Lewis T. Reed, A.R.P.S., A.P.S.A., of Chicago, was displayed this year in the M.I.T. Photographic Salon.



This photograph by Dave Lawlor, of Boston, entitled "Montage - Agriculture and Industry," effectively conveys the relationship between the procurement of raw materials and their conversion into finished products, which is basic to all operations of modern technology.

room in the harbors where they must load and unload. Incidentally, few ocean transports can show a greater contrast between length of voyage and unloading time. The run from Ras at Tannura, in the Persian Gulf, to New York is 8,300 miles; that between Puerto La Cruz, Venezuela, to New York is 1,800 miles. After spending as much as a month on a voyage, a tanker may strip its holds in as little as 10 or 12 hours. As tanker sizes go up, the ships are limited to the use of fewer harbors as terminals. The economic incentives toward larger tanker size are strong, however, and in spite of harbor limitations, the trend to larger and faster tankers is maintained. The initial cost per ton of cargo capacity goes down with increasing size. The most economical speed, and therefore the number of round trips per year, also goes up with size. Within rather wide limits, it takes no larger a crew to handle the large ship than a smaller one.

All of these factors tend to support the construction of larger and faster tankers for American commerce. While perhaps representing not so spectacular an achievement, American owned ore ships are also increasing in size and number.

Hydrofoil Design

THE comparatively new analytical technique of studying mechanical systems by constructing electronic analogues has recently been applied at M.I.T. to the provocative problem of supporting water craft on hydrofoils. The work was carried out as part of a doctoral thesis research by Robert H. Cannon, Jr., '50, former instructor in the Department of Mechanical Engineering, using new high-speed electronic computing equipment developed by Alan B. Macnee, '42, of the M.I.T. Research Laboratory for Electronics.

The possibility of supporting a boat on hydrofoils — underwater wings producing dynamic lift in the same manner as the airfoil wings of an airplane — and thereby achieving more efficient, higher speed, and smoother travel through choppy seas, has been intriguing inventive minds since man's first flight at Kitty Hawk. The first successful man-carrying hydrofoil boat was tested in 1905, and at least 20 or 30 have been operated since, the foils being used experimentally to support such devious craft as PT boats, seaplanes, and high-speed sailboats.

The purpose of the M.I.T. studies was to "sail" a very large number of widely differing boats through many typical sea conditions — all electronically — to determine, at minimum cost, the probable performance of hydrofoil craft under varying sea conditions, and to establish the useful ranges of boat dimensions and hydrofoil configurations.

The newly developed Macnee differential analyzer was ideally suited for these studies because of its high-calculating speed, low-operating cost, its versatility, and the fact that the solution to the equations, repeated by the analyzer 60 times each second, is presented on the screen of an oscilloscope where it appears as a stationary trace.

With the elements of the analyzer connected to form an electrical system, which was mathematically analogous to the mechanical system of the hydrofoil boat, such characteristics of the boat as its length, weight, center of gravity, and the running depth and incidence setting of the foils, could then be varied by simply changing the appropriate dial settings. The effect of such changes could be instantly observed as a simultaneous change in the entire path-of-motion trace on the oscilloscope. For example, as the dial, representing center-of-gravity location, was moved farther and farther forward, the oscilloscope showed the path of the boat becoming more and more oscillatory, until finally it became totally unstable.

In addition to the pitching and rising motions of the boat, the variation of numerous other important quantities such as foil depth, foil loading (which is most important because of the dangerous phenomenon of foil ventilation), and acceleration, could be switched instantly onto the screen. By varying the dials representing each of the boat characteristics in turn, the electrical analogue of the system could be adjusted rapidly to produce the best performance.

Ocean waves were represented by a black mask affixed to the face of a cathode-ray tube whose beam follows a mask profile. In practice, various wave shapes were cut out of black paper and placed in front of the tube. The wave height and wave length could then be varied by adjusting electronic dial settings, as could wind velocity and direction, and the direction of motion of the boat relative to the waves. The silhouette waves were used to show, for example, what direction of motion is most dangerous in a given sea, or the limiting wave size for each type of boat.

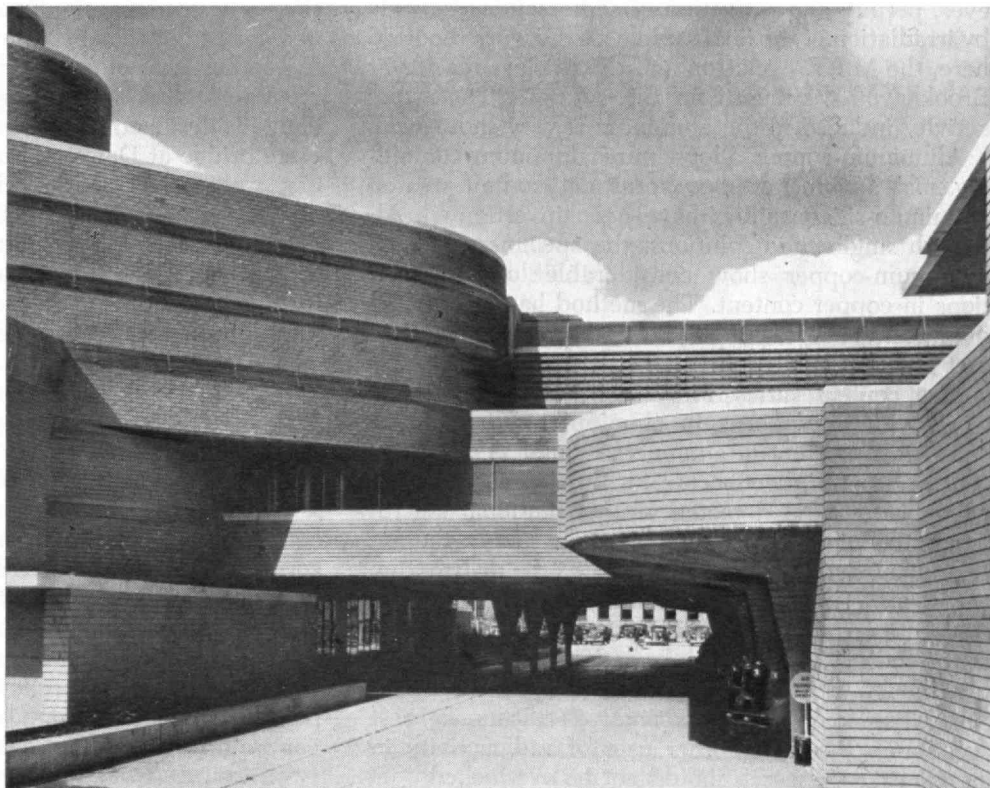
Altogether, some 450 combinations of boat configurations and sea conditions were recorded by photographing various quantities as they were switched to the oscilloscope screen.

On the basis of these results, a number of general relationships can be formulated. For example, one rule of thumb which disclosed itself, is that for satisfactory performance in waves the smooth water running depth of the foils must be greater than the anticipated wave height. It has been shown that up-wind operation is preferable to cross wind. Stringent limits have been established for such basic parameters as hydrofoil loading, center-of-gravity location, and hydrofoil profile.

Dr. Cannon has had the opportunity to apply these relationships to the design of several man-carrying, self-propelled hydrofoil test boats which he has helped build and test in open water. The generally high degree of correlation between the actual performance of the boat and that predicted from the electronic analogue studies is very encouraging.

It is hoped that these general relationships may be helpful to designers of other particular types of hydrofoil craft by indicating in advance the most advisable system configuration, and by predicting the approximate sea-going performance to be expected.

A century ago, office buildings and factories were boxlike affairs with regularly spaced rectangles for windows or doors. As shown in this photograph of the office building of the Johnson Wax Company in Racine, Wis., modern industrial plants may achieve pleasing lines and attractive working conditions by quite different methods. Built without windows or glass brick, this building utilizes glass tubing for both natural and artificial light. Maximum strength with minimum obstruction of floor space is provided by slender columns.



Ewing Galloway

Metal Solidification Studies

RADIOACTIVE tracer methods can often answer these questions about a substance: Is it present? Where? In what amount? How did it get there? The physical metallurgist frequently has to locate a minute amount of a constituent in a metallic structure and may wish to know how this constituent is distributed on a microscopic scale. Radioactive tracers can contribute to the solution of such problems, and their applications to metallurgical research are being developed to supplement such older methods as conventional microscopy.

The solidification of an alloy often produces several solid phases and some elements may become segregated in the resulting complex structure. Research, sponsored by the Aluminum Company of America, and conducted by Arthur B. Michael, under the direction of Michael B. Bever, '42, Associate Professor of Metallurgy, has been devoted to a study of the segregation of certain elements in cast aluminum alloys. Extensive use is being made of radioactive tracer methods.

In this investigation, autoradiography was found more suitable for locating the tracers than the counting techniques commonly used in other applications of radiochemistry. Autoradiography, which has been perfected for application to biology, depends on the sensitivity of photographic emulsions to nuclear radiations. The small scale involved in microstructural investigations, however, causes several difficulties. Good resolution requires a very thin sample, a fine-grained photographic emulsion of high sensitivity, and close contact between the specimen and the emulsion during the exposure.

The radioactive elements can be incorporated into the alloy by addition to the melt, and for many metals, this is the only workable procedure. Aluminum, however, permits the activation of some solute elements by irradiation of the final sample; in the work reported here, the M.I.T. cyclotron and the nuclear reactor at Brookhaven were used for this purpose. The radioactivity induced in the aluminum is very short-lived.

Aluminum-copper alloys, pure aluminum containing small amounts of phosphorus, and sodium-treated aluminum-silicon alloys have been investigated. Although single solid solutions, the specimens of cast aluminum-copper show considerable local fluctuations in copper content. The method has been made quantitative: for example, it has been found that in cast aluminum containing 3 per cent copper, the copper content varies from 2.2 to 3.8 per cent. The work with phosphorus in aluminum indicates that even when present in amounts as small as 0.003 per cent, phosphorus concentrates in minute patches which cannot be detected by conventional microscopic technique. In aluminum-silicon alloys, sodium is known to exert a powerful effect on the distribution and shape of the silicon-rich phase; so far, work with radioactive sodium has failed to show any tendency of the sodium toward a preferential distribution.

Although this summary deals only with an investigation employing radioactive tracers in cast aluminum, the many other uses of radioactivity in metallurgical research should not be overlooked.

Inside Information

DURING the last few decades, extensive research has been carried out to determine the properties of cementitious materials such as concrete. It has long been realized that it would be possible to gain considerable knowledge of concrete if a reliable means of making measurements in the interior of a concrete body were available. In the broad over-all problem, the first step then is the development of a suitable gauge for internal stress and strain measurement.

The Structural Dynamics Laboratory of the Department of Civil and Sanitary Engineering has been working on this problem under the sponsorship of the Navy's Bureau of Yards and Docks. Robert J. Hansen, '48, Myle J. Holley, Jr., '39, Associate Professors of Structural Engineering, and Yuan-chiu Loh, '49, of the Division of Industrial Cooperation, participated in this work.

The problem was approached by first studying the theoretical considerations for the determination of the design requirements of internal gauges. It was found that, by properly designing the gauge, stress and strain inside a concrete body could be accurately measured, even though the modulus of concrete is not constant.

A stress gauge was designed for both static and dynamic measurement over the range of 1,000 pounds per square inch in tension to 9,000 pounds per square inch in compression. The gauge consists of two concentric cylindrical shells with a fairly thick plate on each end. The over-all dimensions are $1\frac{1}{4}$ inch in length and $\frac{1}{2}$ inch in diameter. The load applied on the gauge by the surrounding concrete causes the gauge to deform. This deformation is measured by a specially wound electrical resistance wire which is attached to the inner shell. Results of testing embedded gauges in concrete under compression, tensile, sustained, and dynamic loads, show good agreement between experiment and theory.

Another type of gauge, for compression measurement alone, has been in process of development. This gauge is designed to be used in the prestressed concrete bridge at Danvers, Massachusetts, which is the first prestressed concrete bridge to be built in Massachusetts. The gauges will be used to determine stress conditions inside the concrete under actual traffic conditions. Information thus gained will be used for the further development of accurate design procedures for reinforced concrete members under static and dynamic loading conditions.

What Makes Steel Stainless?

IN 1912, Harry Brearley, of the Sheffield Works in England, accidentally found that a 12 per cent chromium-iron alloy was phenomenally resistant to corrosion and tarnish. This discovery initiated the era of stainless steels. Destined to benefit were the chemical, electrical, automotive, building construction, and transportation industries, not to mention the housewife who was finally relieved of the chore of daily polishing the kitchenware — a time-consuming operation requiring some muscular activity.

(Continued on page 116)



M.I.T. Photo

Latest of the Institute's research and teaching facilities to be completed is the five-story Metals Processing Laboratory, with pent-house Commons Room. The new laboratory adjoins the Guggenheim Aeronautical Laboratory shown at the right.

Metals Processing Laboratory

It Contemplates Injecting Science into the Basic Processes of Production — a Wide-Open Field for Exploitation

By THE TECHNOLOGY REVIEW STAFF

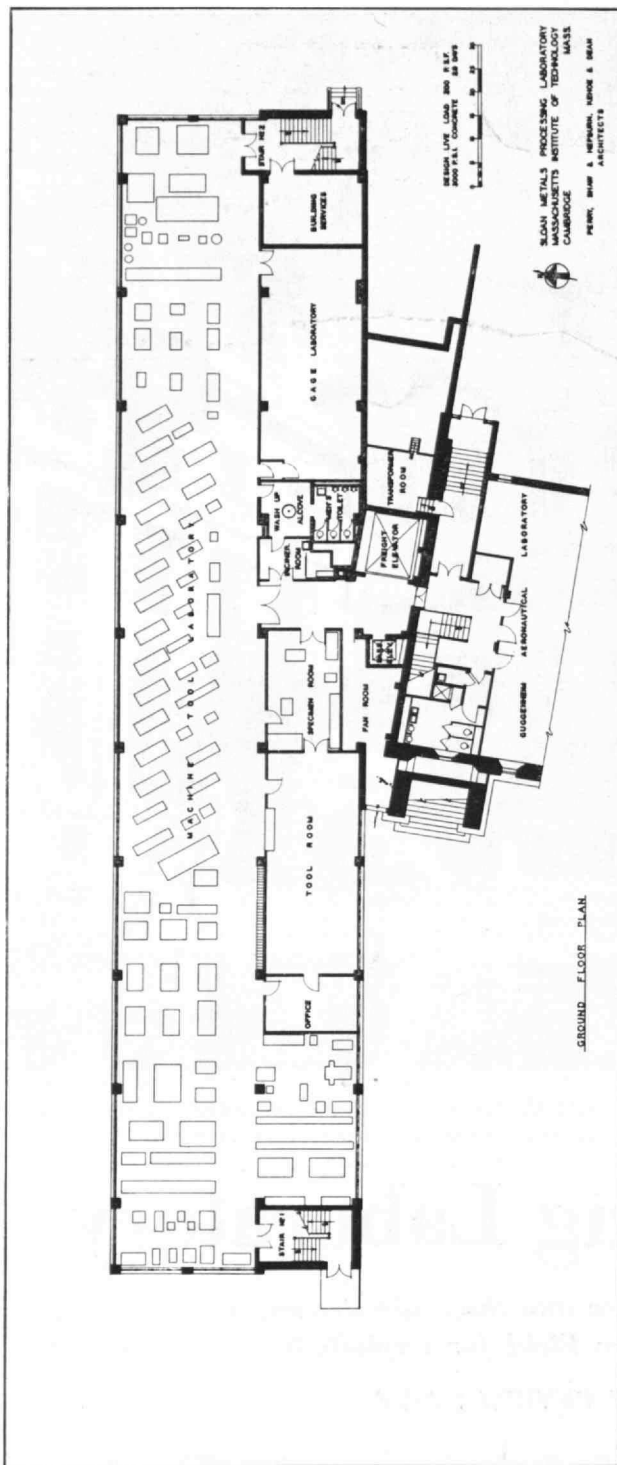
EFFICIENCY of production in the mechanical arts is affected, among other factors, by the physical characteristics of the metals involved, the fabricating equipment, and the tooling employed in any specific operation. Enormous advances have been made and are continually being made in each of these areas. Such advances are reflected in the remarkable accomplishment of American industry in constantly increasing the dollar volume of its products; and in making available to the consumer useful devices of expanding variety, in forms formerly impossible, and at prices that insure mass usage.

Recognition of these facts requires that there be a constant source of qualified personnel, emerging from the nation's technical institutions, to make fullest use of our present accomplishments, and to advance these

attainments as new knowledge is gained, if our technological economy is to progress and prosper. Accordingly, the brunt of training personnel for such leadership as may be required in the future falls on the colleges and universities.

The new Metals Processing Laboratory at M.I.T., provided by a gift of \$1,000,000 from the Alfred P. Sloan Foundation, Inc., marks a step of significant progress in education and research in all types of metal forming and machine tool work. As recorded in the July, 1952, issue of *The Review* (page 500), the new laboratory — illustrated at the head of this article — was dedicated on June 3.

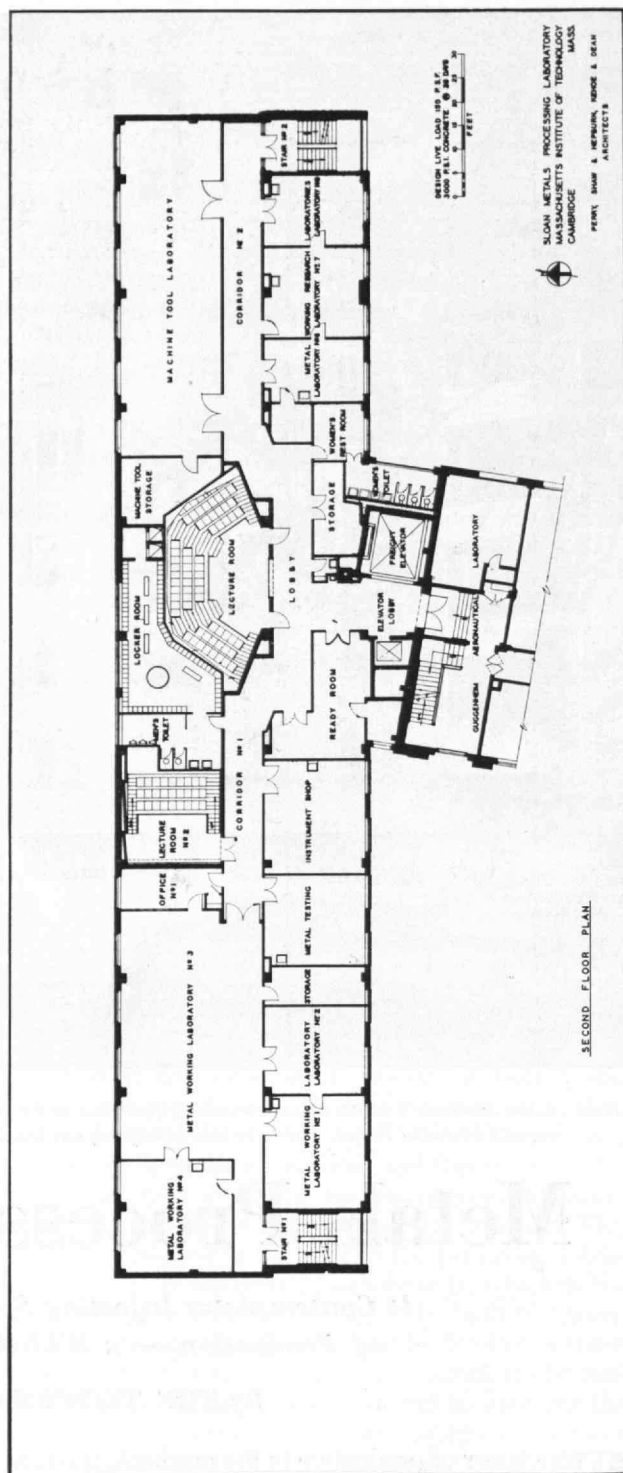
In presenting the building to the Institute, Alfred P. Sloan, Jr., '95, chairman of the Board of General Motors Corporation, said: "This new laboratory pro-



vides, I believe, an instrumentality of significant progress. It contemplates injecting science into the basic processes of production — a wide-open field for exploitation."

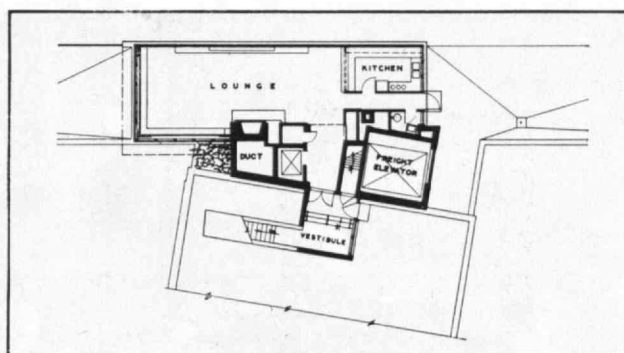
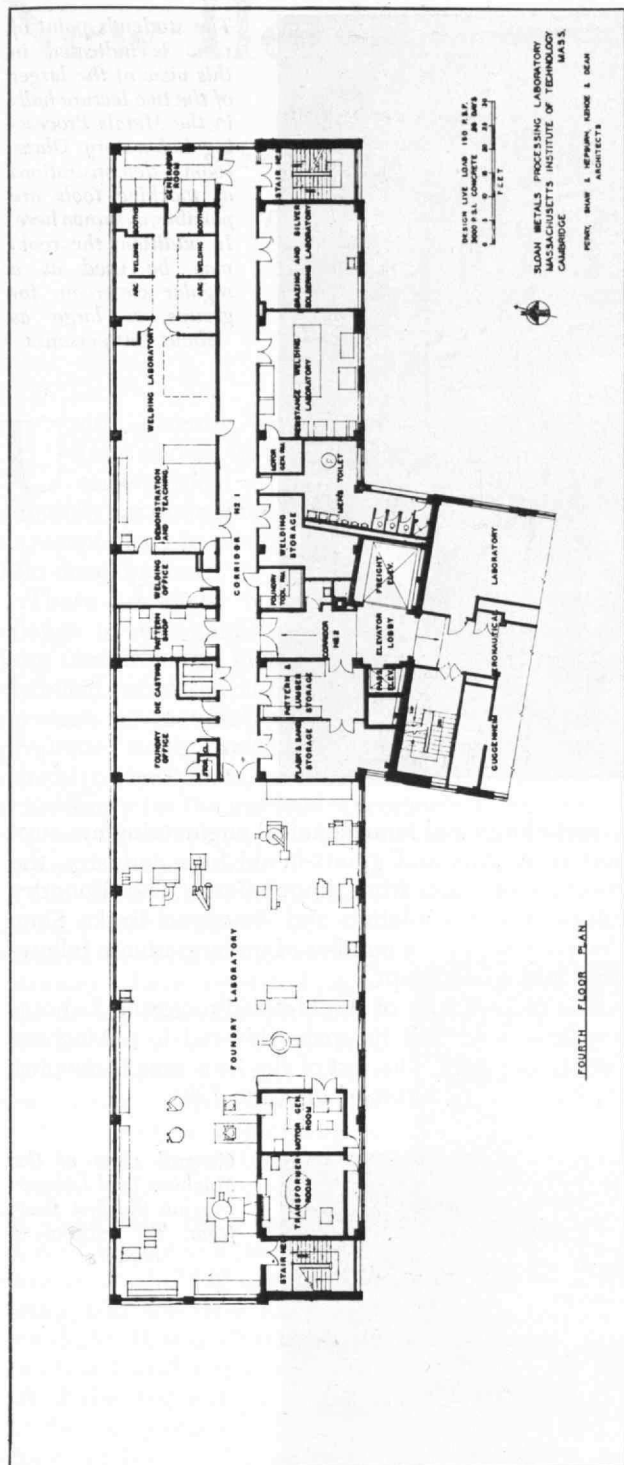
In accepting the laboratory for the Institute, James R. Killian, Jr., '26, President, paid tribute to Mr. Sloan as a generous and loyal Alumnus and to the pioneering program in metals processing at M.I.T. In his acceptance address President Killian said:

I accept this Metals Processing Laboratory from the Alfred P. Sloan Foundation with an exceptionally vivid sense of the way in which educational institutions are built of men and their ideas—not of bricks or glass—or even metals.



The pioneering program in metals processing here at M.I.T. is a result of the kind of vision which sees engineering education as continually requiring alertness to new needs and new opportunities. It is men with such vision who saw the advantage of bringing the science of metallurgy into touch with the whole range of engineering problems associated with metals.

The new building provides the first adequate housing for the Institute's comprehensive metals processing program which was inaugurated in 1946, and in which the Department of Mechanical Engineering and the Department of Metallurgy play active roles in accordance with their specialized interests in the field of metal technology. To best fulfill the specialized in-



Plans of the ground floor and second floor of the Metals Processing Laboratory (opposite page) and of the fourth floor (left) and Commons Room (above). The plan for the first floor is similar to the ground floor plan, except that offices occupy space above the tool room and gauge laboratory. The plans for the second and third floors are also quite similar. The lounge, or Commons Room, is in the penthouse of the Metals Processing Laboratory.

The Metals Processing Laboratory is located on the main M.I.T. campus at the corner of Massachusetts Avenue and Vassar Street in Cambridge. It connects with, and has direct access to, the Guggenheim Aeronautical Laboratory. The building, which measures approximately 52 by 244 feet, has 67,000 gross square feet of floor space. It is faced with neutral gray brick trimmed with limestone, and is of reinforced concrete construction resting on a caisson-type foundation. The building has a well-lighted ground floor with four additional stories and a penthouse.

The ground and first floors, and part of the second, are devoted to instruction and research in machine tool operations, with particular emphasis on metal cutting studies. The remaining part of the second, and all of the third, floor are devoted to metal working and powder metallurgy equipment. The fourth floor contains a well-equipped foundry and welding laboratory. Recitation rooms are located throughout the building with two amphitheater-type lecture halls on the second floor.

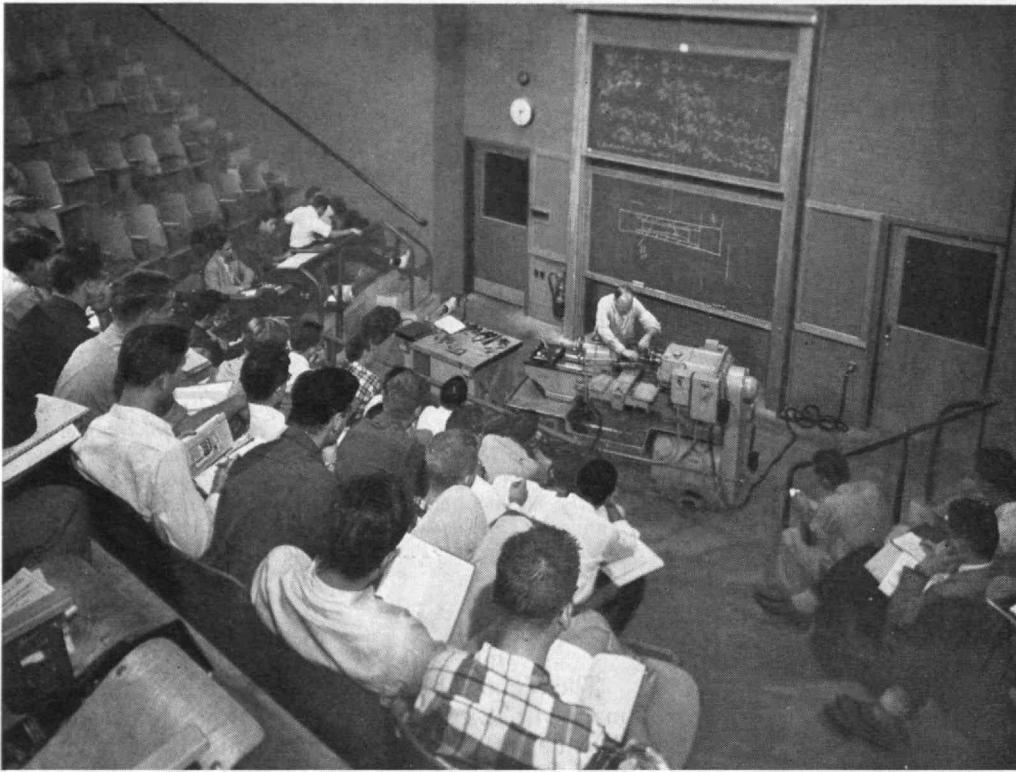
A unique feature of the new building is a penthouse lounge above the fourth floor for the use of students and Faculty members. Equipped with complete kitchen facilities, this room is designed to stimulate social contacts between Faculty and students.

The top-floor location of the foundry, immediately under the penthouse, simplifies ventilation problems, since only short stacks are needed to bring waste gases through the roof. Elsewhere in the building, mechanical ventilation is used.

The new laboratory was planned by Robert C. Dean, '26, of the firm of Perry, Shaw, Hepburn, Kehoe and Dean, with the guidance of: Professor C. Richard Soderberg, '20, Head of the Department of Mechanical Engineering; Professor James Holt, '19, Executive Officer, Department of Mechanical Engineering; Milton C. Shaw and Prescott A. Smith, '35, Associate Professors of Mechanical Engineering; Professor John Chipman, Head of the Department of Metallurgy; Professors John Wulff and Howard F. Taylor, 2-46, of the Department of Metallurgy. The contractor was the

terests of these two Departments, the Machine Tool and Metal Cutting Division of the Department of Mechanical Engineering occupies the lower half of the Laboratory, and the Mechanical Metallurgy Division of the Department of Metallurgy, the upper half.

The Metals Processing Laboratory was created as an interdepartmental laboratory to bring the application of both metallurgical science and of engineering design to the basic crafts of machining, finishing, casting, forging, welding and related techniques of modern manufacturing. By providing students with an awareness of the technical phases of metal production, the program also helps engineers to cope with many of the human problems of modern production.



The student's point of view is indicated in this view of the larger of the two lecture halls in the Metals Processing Laboratory. Classroom demonstrations of machine tools are possible, as shown here. In addition, the room may be used as a regular classroom for groups as large as about 190 persons.

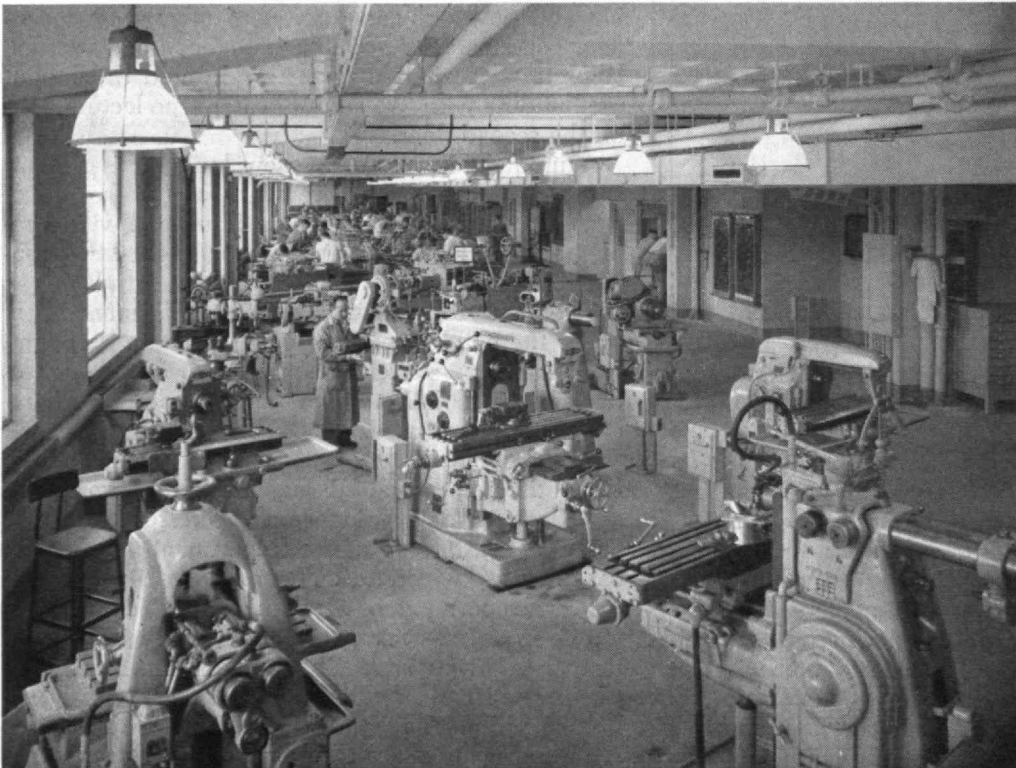
M.I.T. Photo

Platt Contracting Company of Cambridge; and Hayden, Harding and Buchanan were the engineers. The modern furnishings for the penthouse student-faculty meeting room are the gift of the American Brake Shoe Company in honor of William B. Given, Jr., '08, chairman of the Board.

Much of the laboratory equipment, particularly in the foundry, has been given by the Foundry Educational Foundation, foundry trade associations, and by individual donors in industry. The research programs

in metallurgy and in mechanical engineering are supported by gifts and grants-in-aid from industry, the government, and from foundations. The Foundry Educational Foundation and American Brake Shoe Company support a number of undergraduate fellowships and scholarships.

The ground floor of the Metals Processing Laboratory has about half its space devoted to a Machine Tool Laboratory. The rest of the floor area is devoted
(Continued on page 120)



General view of the Machine Tool Laboratory on the first floor, from the northwest corner.

M.I.T. Photo

New Horizons for Machine Tools

New Techniques of Instrumentation and Analysis Stimulate

Teaching and Research in the Field of Metal Cutting

By PRESCOTT A. SMITH

UNTIL recently, an understanding of machine tools and metal processing was looked upon as an empirical art. Since the early 1930's, the situation has undergone a gradual change culminating in recent years in a veritable cataclysm of new scientific developments.

There are many reasons for this rather sudden change in an established field having traditions of long standing. The demand created by gas turbines, chemical processes, atomic energy, and other developments for materials which can retain their useful properties under extreme conditions of temperature, corrosive atmosphere, radiation, and stress have made it necessary for the mechanical engineer to look upon the question of materials in a much more fundamental manner than formerly.

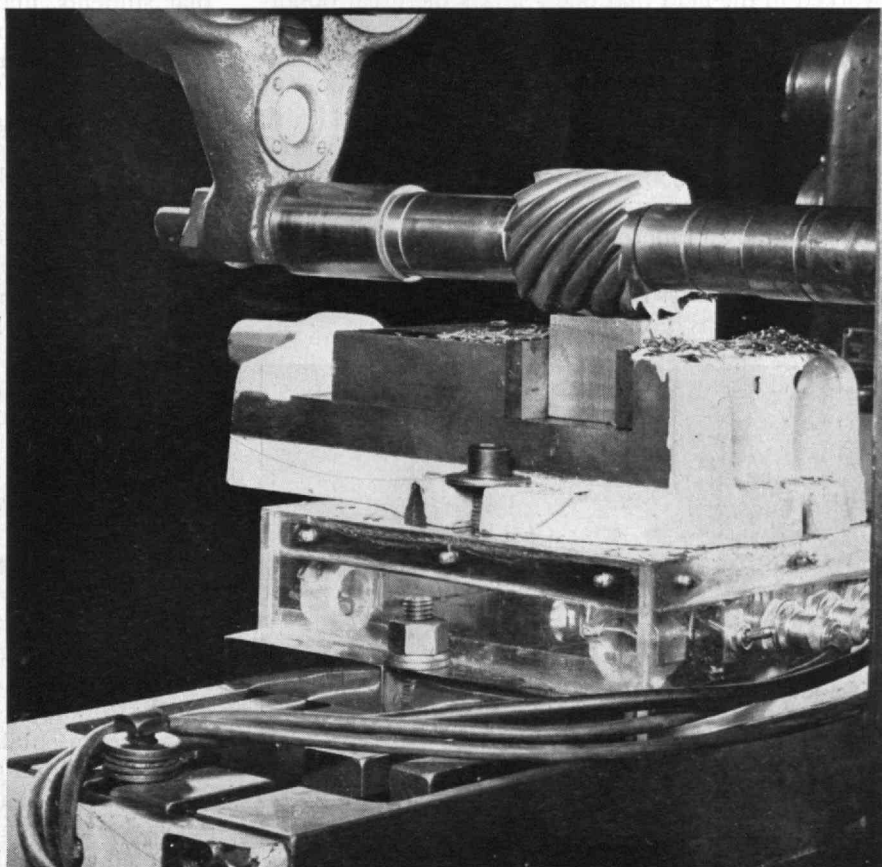
The development of synthetic substances, such as plastics, textile fibers, and sintered metals — not to mention the new metals such as titanium — have suggested possibilities of materials properties which could not even be dreamed of a few decades ago. These new materials have likewise created unprecedented problems of metals processing and machining.

Such new developments as have already been mentioned above have made it necessary to examine the field of metals processing and machine tools in a new light. It was clear that the traditional and empirical methods of the past were inadequate for the new tasks which the engineer in these fields would be called upon to fulfill in the future. But it was also clear that whereas progress in metals processing was making its own magnificent contribution to modern technology, it, in turn stood to gain much from progress which had been developing in related fields.

In the past, the complexity of the subject of metal cutting and similar machine tool operations had been a major factor in adhering to the traditional, empirical approaches. Upon analyzing the subject, it was clear that applied

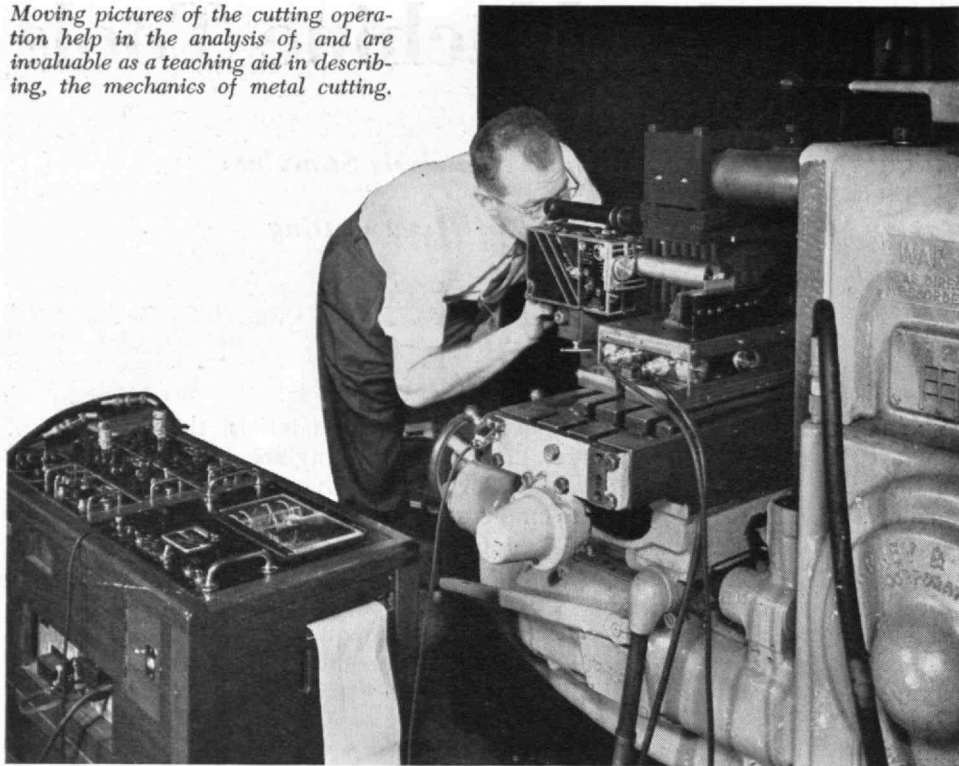
mechanics, strength of materials, thermodynamics, electrical and electronic engineering, physical chemistry, metallurgy, and other subjects were essential for a complete understanding of machine tool operations. Certainly progress in the field of machine tool operations would be accelerated by bringing all of these disciplines to bear upon the problems of metals processing. But it was equally clear that the progress being made in instrumentation, and other analytical techniques in each of these fields would enhance progress in metals processing by making available new quantitative methods which had not previously been possible. Thus, in a relatively short period of time, the empirical knowledge and traditional techniques gave way to a broader, more fundamental, scientific approach.

In a field as complex as metals processing, the transition from an art to a science requires analyti-



*All illustrations — M.I.T. Photos
For a better understanding of cutting operations, the forces in the vertical, longitudinal, and transverse directions acting on the piece cut are determined by the dynamometer containing bonded resistance strain gauges whose electrical outputs are recorded.*

Moving pictures of the cutting operation help in the analysis of, and are invaluable as a teaching aid in describing, the mechanics of metal cutting.



It is with the hope of fulfilling such expectations that the Metals Processing Laboratory was dedicated last June, as previously recorded. The building, and its facilities, are dedicated to a program of education and research directed toward understanding the basic phenomena underlying the use of metals in industry and the arts. Made possible by the generosity of Alfred P. Sloan, Jr., '95, the Metals Processing Laboratory exemplifies the opportunity of high potential for investigation of fundamentals of machine tool operations at the highest scientific level. It is in the new laboratory — with its new and improved facilities for teaching and research — that M.I.T. stu-

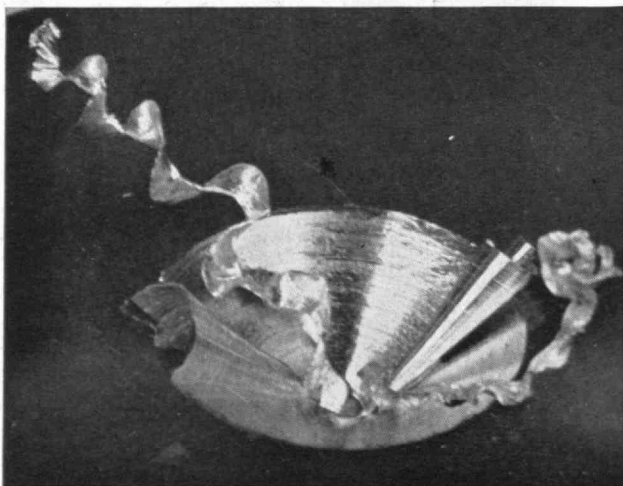
dents, especially in the Department of Mechanical Engineering, obtain their first practice with machine tools and become acquainted with the technical, economic, and manufacturing problems of machine tool operations. It is in the Metals Processing Laboratory that students, undergraduate as well as those with degrees, come into close contact with others who are advancing the forefront of knowledge through research.

cally inclined and trained personnel of broad fundamental education. It is only recently that this field has attracted men of this background. The results which have been achieved in a relatively short time have been quite surprising. It is only after one has worked in the field that one realizes the great opportunities and challenges that machine tools and metal cutting offer. Such opportunities certainly exist in advancing the forefront of knowledge through basic or fundamental research. But equal opportunities exist, even though they may not be so readily apparent on the surface, in engineering education. If it is possible to instill in our undergraduates a new, an invigorating, an enlarged, and more comprehensive view of a field than was possible less than a decade ago, may we not anticipate a further resurgence of progress when they assume positions of importance in industry?

As a result of new facilities offered by the Metals Processing Laboratory, it is now possible to completely cover the basic phases of machine tool work in undergraduate instruction. It has been possible to activate machine tools, obtained at the close of World War II but held in storage for lack of space, to augment the modern machines from the former machine tool laboratory. Now 200 diversified machine tools are available for students, teaching, and research. The new building provides more space for these machines; it makes better use of floor space, and has greatly improved lighting. The offices for teaching personnel, while not large or elegant, feature good furniture and lighting, and interesting and effective colors.

Teaching and Research Balanced

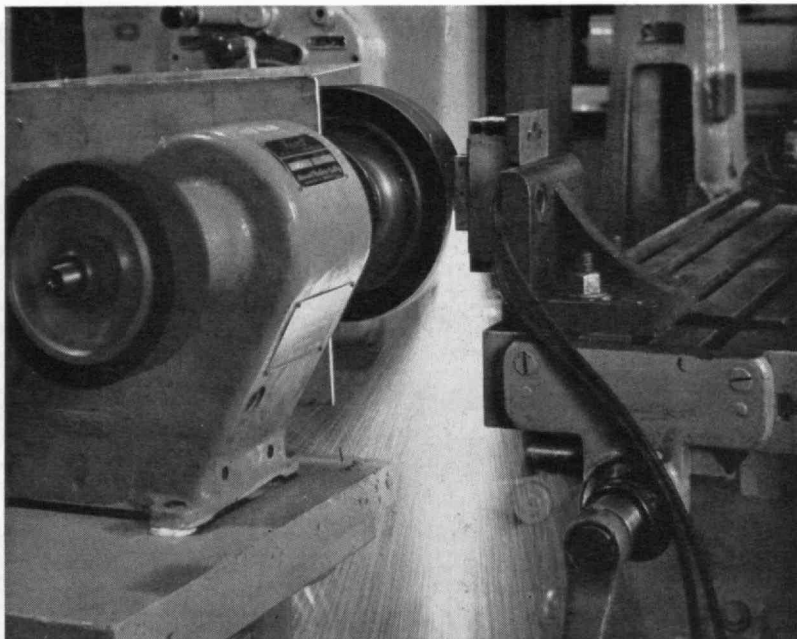
The staff of the laboratories — machine tool and metal cutting — appreciate their pleasant new surroundings. The metal cutting laboratory devoted principally to graduate study, and research, is equipped with a representative group of machine tools, potentiometers, strain-gauge recorders, force-measuring dynamometers, and wear-testing instruments. It also has a chemistry laboratory with sink, hood, benches, and metallographic mounting and polishing equipment. A small but effective and completely equipped darkroom is attached to the metal cutting laboratory as an important adjunct in conducting study.



Recent studies show that two mechanical operations occur simultaneously in drilling metal. The cone-shaped chips are cut by the advancing blade of the drill. The long and narrow chips are extruded from the point of the drill.

A basic M.I.T. policy is that professional teaching is most effective in an atmosphere of creative work, and the program of the new laboratory is formulated on this basis. Since this laboratory is one of the first contacts which the student makes with professional work, the effectiveness of its teaching program is very great. An active research program provides material for the advanced teaching program, and challenges and stimulates teaching at less advanced levels. A substantial portion of the type of research currently in progress in the Department of Mechanical Engineering was described by Milton C. Shaw, Associate Professor of Mechanical Engineering, in charge of the Machine Tool and Metal Cutting Division, in the March issue of *The Technology Review*. Although it is felt that the Institute is making a worth-while contribution to progress in metal cutting, Dr. Shaw is currently in Europe lecturing and visiting many technical institutes and industrial firms to view their current practices in teaching, research, and manufacturing. It has fallen to the lot of the author to prepare this article while Dr. Shaw is on a three months' visit to Germany, Sweden, the Netherlands, Switzerland, France, Denmark, Belgium, and England in an effort to still further improve the program of metals processing at M.I.T.

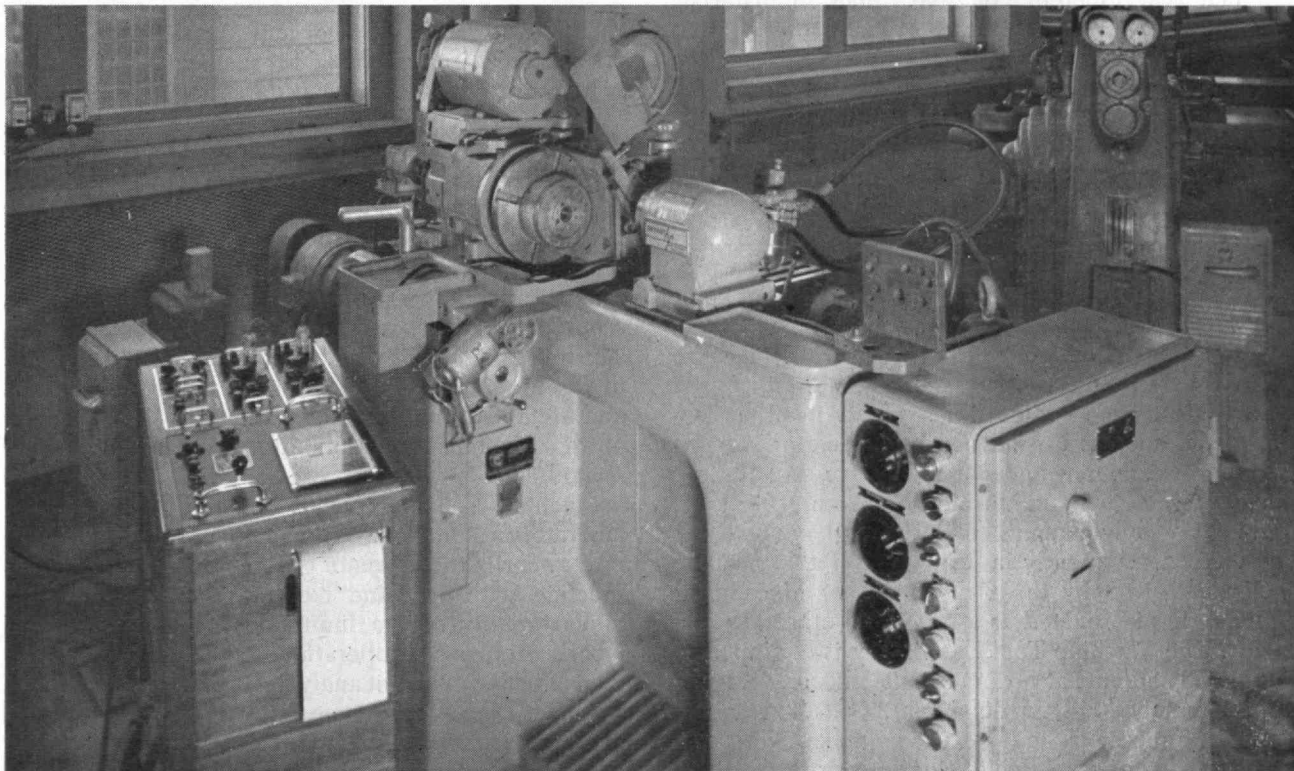
On casual examination, the teaching program may appear to receive benefits from research and give nothing in return, just as metal cutting research may seem to profit from the fundamental subjects with-



Grinding by means of an abrasive belt has been studied in the Metals Processing Laboratory as a means of improving cutting action. Although not too clearly shown in this photograph, material at the right is being cut by an abrasive belt passing over the rotating disk in the center of the illustration.

out making a comparable contribution. But first impressions do not stand up under closer scrutiny. Actually the teaching of a subject is a direct challenge to the research program from which the material, in the form of a new concept, was derived. Who can cross-examine a technical subject better than a group of young engineers?

Metal cutting research has made contributions to, and extended some of, the fundamental subjects. In



Analysis of the grinding process is facilitated by an internal grinder with dynamometer holding the work to be cut. The amplifier and recorder are in the portable cabinet in the lower left.

Metallurgical considerations form an important part of metal cutting studies. Students receive sufficient training in metallurgy to be able to use and to interpret and understand results obtained from the metallograph.



the materials field, the understanding of metals strength and yield has been clarified and extended through the size effect. For example, the results obtained in grinding suggest that the stresses involved are from 20 to 40 times greater than the conventional tensile strength. This surprising result has not been fully explained, but it is believed that it may reflect the fact that inherent cohesive forces in materials can develop strengths of this order, provided that specimens of sufficiently small dimensions can be obtained. The grinding chip is such a test specimen. This is only one of the many results which has been made available to us by new instrumentation.

In a similar way friction, wear, and heat transfer have benefited. In some cases, the fundamental work had been carried out but lacked an application; in other cases, a solution was found by attacking a previously sticky problem from an entirely different point of view.

All students in Mechanical Engineering take the courses in machine tool work and metal cutting. It is also a required subject for students in other Departments, such as Business and Engineering Administration, Economics and Social Science, Metallurgy, Naval Architecture and Marine Engineering, Geology, and is commonly taken as an elective subject by other students. Consequently, a large part of the machine tool work given by the Department of Mechanical Engineering is devoted as a service to other Departments. The Machine Tool Laboratory is equipped to handle 50 students at a time and has been averaging approximately 400 students a year.

In the process of acquainting engineers with machine tools, the most effective first step is through the use of machines in demonstration-type lecture rooms. For such use there are two rooms of the amphitheater-

design, both with fine acoustics, into which every type of machine tool may be easily placed. The lecture is followed by actual demonstration of the various machine tools, with subsequent practice for students on machine tools in the laboratory.

Allotment of Space

The entire Machine Tool and Metal Cutting Division of the Department of Mechanical Engineering, with the exception of the Lubrication, Friction and Wear Laboratory, is located in the lower half of the new Metals Processing Laboratory. On the ground floor is located part of the Machine Tool Laboratory, offices, tool room, and a constant temperature room for precision measuring. Most types of contact and optical measuring instruments are available, including a modern metallograph as well as an electron microscope. The latter are used principally for research. The first floor of this new building is devoted to more of the Machine Tool Laboratory, tool room, offices, and Metal Cutting Research Laboratory. The balance of the Machine Tool laboratory is located on the second floor.

Machine tool operation is but one portion of the laboratory's function. Production analysis and improvement is the ultimate goal. In addition to actual practice with machine tools, students acquire an understanding of the limitations of machines, and labor's problems in operating machines. Time study is an effective means of analyzing a machining process. To make a satisfactory time study, the elements of the operation must be understood. The ability to estimate the time to perform an operation is important in any field, especially so for the machine designer.

(Concluded on page 130)

Metal Processing at M.I.T.

Specially Prepared Textbooks Facilitate Undergraduate Teaching of Metal Working, Casting, and Welding

By HOWARD F. TAYLOR

This article describes teaching and research activities of the Metal Processing Division of the Department of Metallurgy at M.I.T., and the important part played therein by the new Metals Processing Laboratory. Preparation of this article should fall to the lot of my colleague, Professor John Wulff of the Department of Metallurgy; for it was under his able direction that the Department's program in casting, hot and cold forming, and joining of metals has evolved. Since Professor Wulff is touring Europe, visiting metallurgists and educators, metal fabricating plants, and educational institutions, the honors have fallen to the writer.

At different schools, and indeed to different people, the term "metal processing" means different things. It may mean a completely crafts type of training wherein students perform shop exercises in casting, metal working, welding, powder metallurgy, or metal cutting. It may indicate training in which the total emphasis is on the theory and mathematics of fabricating processes, with laboratory teaching held unimportant to the adequate training of an engineer. It may mean, as it does at M.I.T., a happy blending of the two extremes, wherein only enough time is spent in the laboratory to provide appreciation of shop processes and problems, with the rest of the students' time spent in developing metallurgical and engineering appreciation of metal fabrication. In other words, at M.I.T. the principles and practices required to understand the processing of metals into useful engineering articles by casting, working, and welding are taught. The aim is to give the student a working acquaintance with the structure and properties of metals, knowledge to select metals intelligently for a given use, and the knowledge needed to determine the optimum and most economical method for shaping metals to his needs.

Metal processing, as it has developed, is a relatively new subject in the M.I.T. curriculum. In 1946 the Metal Processing Division of the Department of Metallurgy was established with Professor Wulff in charge. At that time, buildings and equipment were inadequate for carrying out the metals processing program as it was envisioned. To accommodate the changes required, several things were necessary; among them were:

1. Recognition of the need for a strong course in metal processing in the curriculum offered to engineers;
2. Active interest in such a program on the part of the heads of the various engineering departments;
3. A sympathetic Administration;

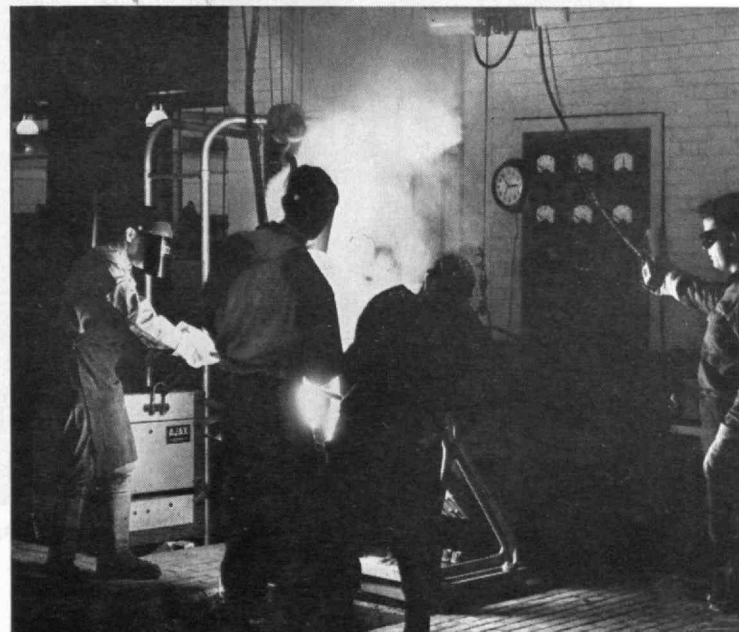
4. A basic engineering curriculum already established and working well;
5. A man to head up the undertaking;
6. Equipment;
7. A sponsor.

Advances being made in engineering required unusual properties in metals, and even demanded metals not yet fully developed; metals whose properties were certainly not generally understood. Intelligent and dependable use of metals to operate dependably in intended applications required a broader basic understanding of their properties by all men engaged in fabrication and allied fields. Jet-engine programs and development of the wonder metal of the age, titanium, whose uses and methods of fabrication are still challenging and unsolved problems, underscored this need. Since students in all branches of engineering so obviously needed this broad foundation in metals technology, recognition of the desirability of metal processing courses in the curriculum at M.I.T. came readily.

Fortunately, Professor John Chipman, Head of the Metallurgy Department, Professor C. Richard Soderberg, '20, Head of the Mechanical Engineering Department, and Professor Erwin H. Schell, '12, Head of the Department of Business and Engineering Administration, were enthusiastic about having a course in metal processing. Their wholehearted support, coupled with the sympathetic and encouraging attitude

Students inoculate a heat of iron with magnesium alloy to produce nodular or ductile iron, as part of their program of "learning by doing."

All Illustrations — M.I.T. Photos



of the Administration, paved the way for development of a co-operative venture in teaching.

The man chosen to develop a course in metal processing was Professor Wulff, whose background in physics, and later physical metallurgy, and whose unflagging interest in teaching and in students, per se, fitted him perfectly for the job. An integrated program of teaching and research in metal processing which satisfies the requirements of the Institute's engineering departments, has evolved in a little over five years.

Equipment for the laboratories has been obtained over this same period. It has come chiefly as the result of gifts or grants from industrial sources, and some has been acquired as the result of purchases on research contracts. To date the foundry, welding, and powder metallurgy laboratories have been fully equipped and modernized, but about \$80,000 is still needed for metal working facilities.

Alfred P. Sloan, Jr., '95, chairman of the Board, General Motors Corporation, who has richly endowed M.I.T. in many ways, provided the needed building to house the new facilities. His grant of \$1,000,000 made possible a five-story building (on the corner of Vassar Street and Massachusetts Avenue, adjoining the Guggenheim Aeronautical Laboratory) which has been described elsewhere.* Welding shops and foundry are housed on the top floor, powder metallurgy and metallurgy offices on the third, and metal working on the second floors. Half the second floor houses metal cutting, and the lower two floors, the machine tool laboratory which had been located in Building 3

* The Technology Review, 54:500 (July, 1952), and 55:89 (December, 1952).

since M.I.T. moved to Cambridge in 1916. Mechanical Engineering personnel have offices on the ground and first floors, and classrooms and auditorium take part of the second and third floors. The penthouse atop the fourth floor houses the William B. Given, Jr., ['08] Lounge, a retreat for development and maintenance of good student-teacher relationships, and for special meetings.

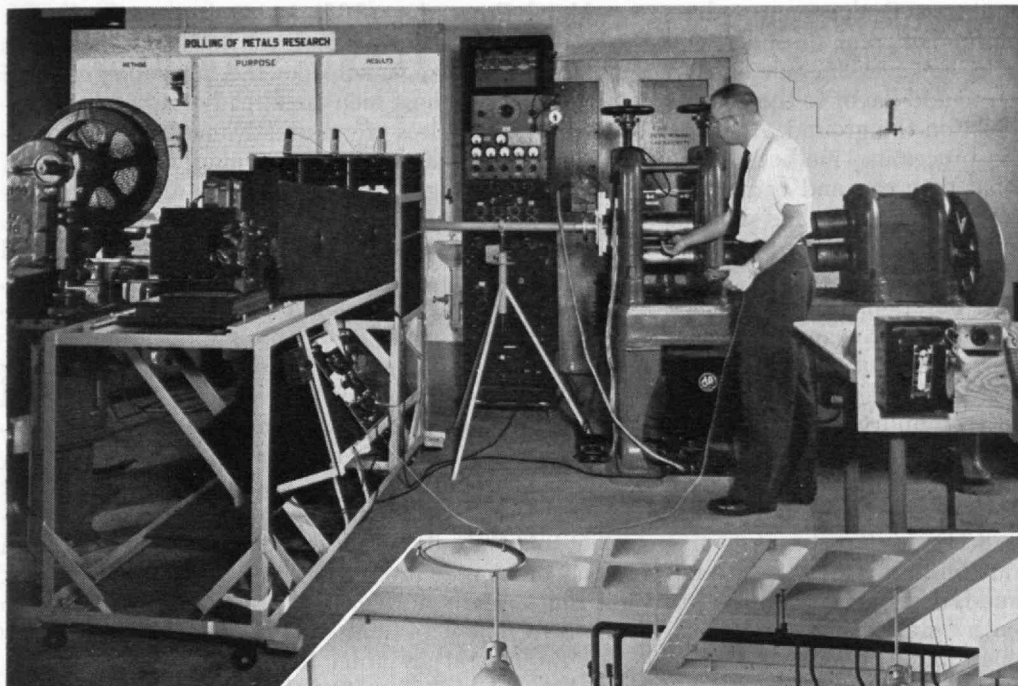
The importance of the new Metals Processing Laboratory to the teaching and research program is best reflected by a few examples. Heretofore it has been necessary to hold lectures and recitations in buildings too far from the laboratory to permit demonstrations. Now, with the lecture rooms just down the hall, so to speak, full-scale equipment can be used to heighten interest and improve teaching. Of course, fresh new laboratories are good for morale, and the contrast between the old and the new is most impressive in this respect.

Larger, better heated, and better ventilated rooms are available now and adequate storage space is at hand. A greater asset than might at first be expected comes from having these splendid new facilities on the main campus. Somehow there seems to be better fraternization of the desirable type between departments, and even between divisions of the same department. Being able to have offices together is still another advantage. All in all, teamwork and enthusiasm seem to be running at a new high level.

The Given Lounge is an interesting innovation at M.I.T. It represents an atmosphere more relaxing and pleasant than the laboratory or office. The appoint-

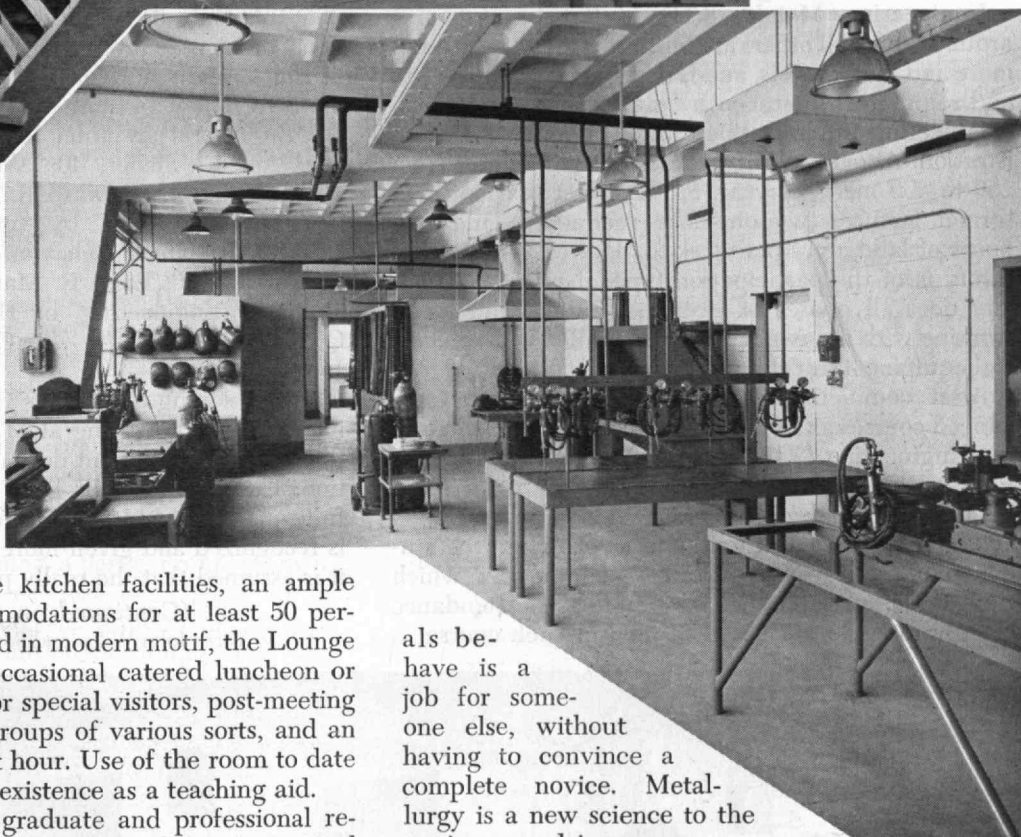


A general view of the main laboratory for foundry work, showing the 175-kilovolt-ampere induction furnace in the right foreground.



Below: General view of Welding Laboratory, with equipment ready for student participation in the practical aspects of welding.

Above: View of Metal Working Laboratory showing rolling mill and associated experimental equipment.



ments boast complete kitchen facilities, an ample snack bar, and accommodations for at least 50 persons. Durably furnished in modern motif, the Lounge serves nicely for an occasional catered luncheon or simple get-togethers for special visitors, post-meeting teas, student-faculty groups of various sorts, and an occasional refreshment hour. Use of the room to date has amply justified its existence as a teaching aid.

A large volume of graduate and professional research is conducted continually in the various metal processing fields, but the main effort is directed toward undergraduate teaching. The program in the Metal Processing Laboratory is an interdepartmental entity and, to a degree, serves many masters. It is necessary to cater to men in the Departments of Mechanical Engineering, Metallurgy, Aeronautical Engineering, Business and Engineering Administration, and to some extent, all departments at M.I.T. It is significant and portentous that Mr. Sloan's gift has made it possible to combine in a single building the casting, welding, metal working, and powder metallurgy sections under the Department of Metallurgy with the Machine Tool Laboratory and metal cutting section of the Department of Mechanical Engineering.

An engineering student needs to be basically well trained before he can benefit effectively from training in metal processing. It is hard enough to separate an informed youngster from the feeling that making met-

als behave is a job for someone else, without having to convince a complete novice. Metallurgy is a new science to the engineer, and in many ways requires a drastic change of thought. No attempt is made to teach metallurgy as an independent science — that is the job of the physical and process metallurgist; rather we teach a brand of metallurgy designed to give the engineer an appreciation of how and why metal articles are cast, welded, worked, or made from metal powders. An engineer must know not only how to select his materials correctly, and know what to expect from them after they have been shaped and treated, but he must also know the best and least expensive methods for forming them into the shapes he wants, and for treating them to the properties he requires. In short, he needs to know the possibilities and limitations of his materials and the available methods for processing them.

We find it unprofitable to teach exclusively on a case-history basis — that is, to choose a particular article and discuss ways and means for making it. This

approach is time-consuming and does not reduce easily to treatment of the fundamental, or underlying principles involved. We do, however, include enough of this practical approach to add flavor to the courses and keep our collective feet on the ground. Actually, we attempt to teach the processing methods available, how they work, what they can and cannot accomplish, what they have been used for, and perhaps in some cases what they ought to be used for—all this with enough metallurgy and engineering theory for sound and logical interpretation. We do not seek to make a mechanical engineer, for example, over in the image of a metallurgist. We think to do so would be unwise and unnecessary. These are the guiding principles of our courses in foundry, welding, metal working, and powder metallurgy.

Specifically, the courses offered to the undergraduate are the following:

Engineering Metals (3.11) is the basic course around which all others are built. It is taught at sophomore and junior levels, and is designed specifically for, and required to be taken by, students in Mechanical Engineering and in Business and Engineering Administration. Altogether, this course accommodates from 250 to 400 men per year. Students get two hours of formal lecture, two one-hour recitations, and two hours of laboratory per week for 15 weeks. The laboratory is of the participation type; the student actually does all phases of casting, welding, and metal working with his own hands, using full-scale, commercial equipment, for the most part.

After completing 3.11, a student takes such advanced courses as Foundry Engineering (3.13), Welding Engineering (3.15), Powder Metallurgy (3.16), or Plastic Working of Metals (3.18). These courses are taught by men specializing in each field and are open at undergraduate and graduate levels. Here the student comes to grips with advanced theories which time did not permit to be included in 3.11. Attendance usually ranges from 25 to 75 men in each course.

Metal Processing (3.12) is taught specifically for metallurgists at the senior level. It is a participation laboratory course, much like the laboratory part of 3.11; but since these men are already trained in metallurgy, the exercises are more advanced and two one-hour lecture periods are used to amplify principles of metal processing. Men with 3.12 are also eligible for courses 3.13, 3.15, 3.16, and 3.18, already enumerated.

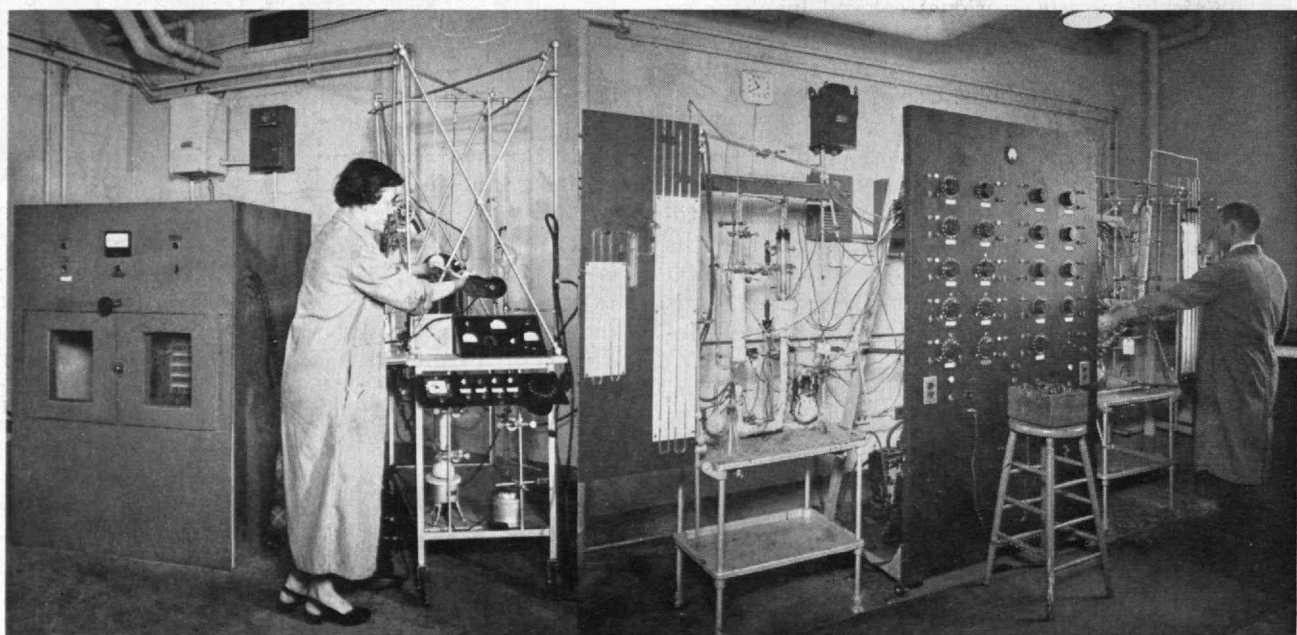
Also offered are undergraduate thesis work and courses 3.62 and 3.63, known as Special Problems. These courses are common to all divisions of the Metallurgy Department.

One of the prime problems to date has been finding suitable texts for courses. The various fields of metal processing are notoriously lacking in textual material; evidence of this is the relative inattention given these subjects in colleges and universities in past years. After trying many approaches, it became evident that texts must be prepared. This has either been done, or is in the process of being done. The first book of the series is now off the press, with at least two more to follow by mid-1953. These are: *Metallurgy for Engineers*† by John Wulff, Howard F. Taylor, 2-46, Amos J. Shaler, '40; "Welding Engineering" by Harry Udin, '37, Edward R. Funk, '48, John Wulff; "Powder Metallurgy" by Amos J. Shaler, '40, John Wulff; "Mechanical Behavior of Metals" by Walter A. Backofen, 2-46, Earle R. Marshall, '48, John Wulff; "Foundry Engineering" by Howard F. Taylor, 2-46, Clyde M. Adams, Jr., '49, George E. Schmidt, Jr., John Wulff.

In developing techniques for undergraduate training in metal processing at M.I.T., it is assumed that the really good student doesn't need too much attention; European schools have long operated successfully on this assumption. Often the really good student is recognized and given more rapid processing. Also, it is assumed that the really poor student has proved

(Continued on page 124)

† New York: John Wiley and Sons, Inc., 1952.



Powder metallurgy and special research programs are part of the activities in the Metals Processing Laboratory. Left: Apparatus for experiments in vacuum sintering of powder metal compacts. Right: Equipment for the deposition of tungsten and molybdenum from the vapor phase.

The Managerial Evolution

The Stage Is Being Set for a Business Renaissance.

*But Professional Management Will Have to Provide the
Spiritual and Moral Strength to Play the Leading Role*

By EDWARD McSWEENEY

LAST fall the writer had a visit with a man who sparked the building of one of our large industrial empires—one of the few men with all the qualifications for the title of Industrial Statesman. When the conversation got around to the subject of management, as it so often does these days, he said: "Our company has been controlled and managed by myself and a small group of my associates. Within another five years there probably won't be any of us left in the active management, and I am deeply concerned and worried about just what's going to happen."

The author's only comment was that the affairs and future destiny of the company would obviously have to be turned over to paid management. This seemingly innocent observation set off a series of mild explosions that quickly began to generate more heat than light and pointed up one of the major problems facing all industry.

He came right back by saying, "That's just what's worrying me, because the way things are headed we are educating and training a large group of managerial specialists, but we just don't seem to be able to develop the managerial leaders who must be ready to take up the burden of running our ever expanding industrial plants." He went on to say, "Business has become so complex that we cannot operate without all types and kinds of managerial specialists, but the trouble is that specialists very seldom become leaders except in their own specialties."

The impact of this discussion pointed up an idea that has been gnawing at the writer's consciousness for some time, and since that time the idea has been discussed with many influential and thoughtful people whose concurrence has strengthened his conviction. To state the idea briefly, there is every indication that American industry is in a managerial evolution involving the development of leadership rather than the assumption of power, and it is fostered less by the palace technique on management's part than by management's recognition and acceptance of the obligations and responsibilities of leadership.

This problem of spotting and developing management leaders of the future is of such vital importance to our national well-being that we all must recognize that something new is being born between the business world as it was and the business world as it is going to be, and that only in-

spired managerial leadership can put the pieces together into a pattern that will perpetuate our industrial heritage.

Although Arnold J. Toynbee in his amazing book, *A Study of History*,* does not give specific answers to the problem of developing managerial leadership, the broad strokes with which he paints the background of our historical heritage might furnish some clues. He defines the breakdown of civilizations in the following terms:

1. Loss of command over the environment.
2. Failure of self-determination.
3. Schism in the body social, as between a dominant minority and an internal proletariat, or between them both and an external proletariat; for example, the barbarians of Roman times.
4. Schism in the soul—which occurs when the individual members of a disintegrating society lose their opportunity for creative action.
5. Crisis is hastened, the historian holds, by adversity. If the blows and pressures are overpowering, disintegration or destruction follow. If their challenge can be overcome, on the other hand, the temporarily defeated recover and go on to higher achievements.
6. Often the climax is attained through spiritual or religious rebirth or revival, which is sometimes preceded by what the author [Toynbee] calls "withdrawal and return." Individual examples which come to mind are those of Moses ascending Mount Sinai, and the 40 days Christ spent in the wilderness. Saint Paul, the Buddha, Mohammed and Machiavelli all retreated from society before taking up their several challenges.

There is a definite parallel between this evolutionary process and the course which business leadership followed. Let us consider this briefly, beginning with the so-called Captains of Industry, the Empire Builders, and the capitalists of the old school. As we all know, between 1900 and World War I this type of individualist lost "Command over the Environment." The trust-busting of Theodore Roosevelt, the New Era of Woodrow Wilson, the boom-and-bust of the 1920's, and the combination of depression and World War II all did their part in listing him among the Vanishing Americans.

*London: Oxford University Press, 6 volumes, 1934.

Those old leaders had an abiding faith, a spiritual dedication, which somehow disappeared. Many were truly evangelical, and while some equated their wealth with self-righteousness founded on John Stuart Mill, they exerted a positive force in religion and in the founding and endowment of colleges, hospitals, and other public institutions on an enormous scale. Andrew Carnegie, John Wanamaker, Elbert H. Gary, and the two J. P. Morgans — all of these men were firm in their faith and zealous in its extension.

The leader of industry as a religious and social leader, with a few conspicuous exceptions, disappeared, by and large, in the 1920's. The income tax probably helped in ending the species, while the taxing of estates and inheritances speeded up the process. Carnegie without his millions might still have been a spiritual force, affecting many people, but on a much smaller scale.

Toynbee's "Failure of Self-determination" also had its counterpart in this twilight of the giants. The midget on J. P. Morgan's lap; the conviction of

derings of certain economists and professors. Positive business leadership, in the social sense, has not been exercised to any prominent degree since the New Deal forged its victorious farmer-labor alliance. Business has been divided, not united, in its reaction and response.

Inevitably, the condition led to "Schism in the Soul" of the individual businessman. The titular successors to the departed capitalists assumed their roles as hired men, walking gingerly along the tightrope — sincere enough, but rarely inspired — or if inspired, lacking the will or the power to break out of the containing forces. What "creative action" they exerted was confined and restricted to almost minimal scope.

All of these negations add up to adversity, in Professor Toynbee's special sense. There is little doubt that disintegration — moral disintegration — followed. The pursuit of the "fast buck," the hucksterism of the 1940's, the squirrel-cage striving for wealth via opportunism, corruption and *mésalliance* — are hallmarks of decay at the top.



Underwood and Underwood

The stage is set for a business renaissance. Technology has not stood still. Plant and equipment are at an all-time peak. The tools are there. . . . The only unknown . . . is: Has business leadership what it takes, spiritually, to grasp its golden opportunity?

Richard Whitney; the death sentence on holding companies and personal trusts; the witch-hunting against bankers and businessmen — all fit logically into this pattern of breakdown and disintegration. The negative curbs of depression and reform were followed by the positive controls of World War II — another postponement of self-determination.

"Schism in the Body Social" is easy to spot in the record, when the "dominant minority" of business fought a losing battle with the unions and with the debasement of our currency. Its symptoms are displayed in countless other places — in the findings of commissions, in books which have since become textbooks in our public schools, in the rulings of government agencies, in the pseudo-scientific mean-

Pursuing the analogy, we come to the question: Has the adversity been overpowering and hence fatal to true business leadership? Or has it been one of a degree that will stimulate a comeback which, through spiritual regeneration, will carry the leadership of business to new and greater heights?

The author believes the second is true; that is, that we are on the verge, not of a breakdown, but of a break-through. If the writer reads the signs correctly, including the weakening and near demoralization of the Fair Deal forces, the stage is being set for a business renaissance. Technology has not stood still. Plant and equipment are at an all-time peak. The tools are there. The tremendous

(Concluded on page 128)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Division of Biochemistry Formed

JOHAN M. BUCHANAN, now Professor of Physiological Chemistry at the University of Pennsylvania, has been appointed professor and head of a new Division of Biochemistry in the Department of Biology at the Institute beginning July 1, 1953.

Creation of the new division, which was announced by George R. Harrison, Dean of the School of Science, marks an important extension of M.I.T.'s activities in the biological field. The new group will operate as an autonomous unit within the Department of Biology, closely correlated with the other activities of the Department—particularly in the fields of general physiology and biophysics. According to Dean Harrison, the new division will be responsible for teaching and research in biochemistry at all levels—undergraduate, graduate, and post-doctoral. Its members will work in co-operation with the Faculty of the Departments of Chemistry and Food Technology, where closely related activities are already under way.



M.I.T. Photo

John M. Buchanan

... recently appointed head of the newly created Division of Biochemistry in the Department of Biology at M.I.T.

Housing for the Division of Biochemistry will be provided on the sixth floor of the new John Thompson Dorrance Laboratory of Biology and Food Technology. Plans are now being made for the special equipment and facilities which will be needed by the enlarged staff expected to be active in the division by the fall of 1953. The installation will be completed by the time Dr. Buchanan takes up residence in July of that year.

In its research program, the Division of Biochemistry is expected to give special emphasis to studies of the growth, structure, and reproduction of cells, which are the ultimate building stones of all living matter. This will include the synthesis of a number of important biological compounds.

Commenting on Dr. Buchanan's appointment, Professor Francis O. Schmitt, Head of the Department of Biology, said: "Professor Buchanan's training and experience especially qualify him for this important post at the Institute. He is widely known for his researches in the biosynthesis of biological compounds, particularly the purines and glycogen, and he has also made important contributions in the isolation and purification of enzymes."

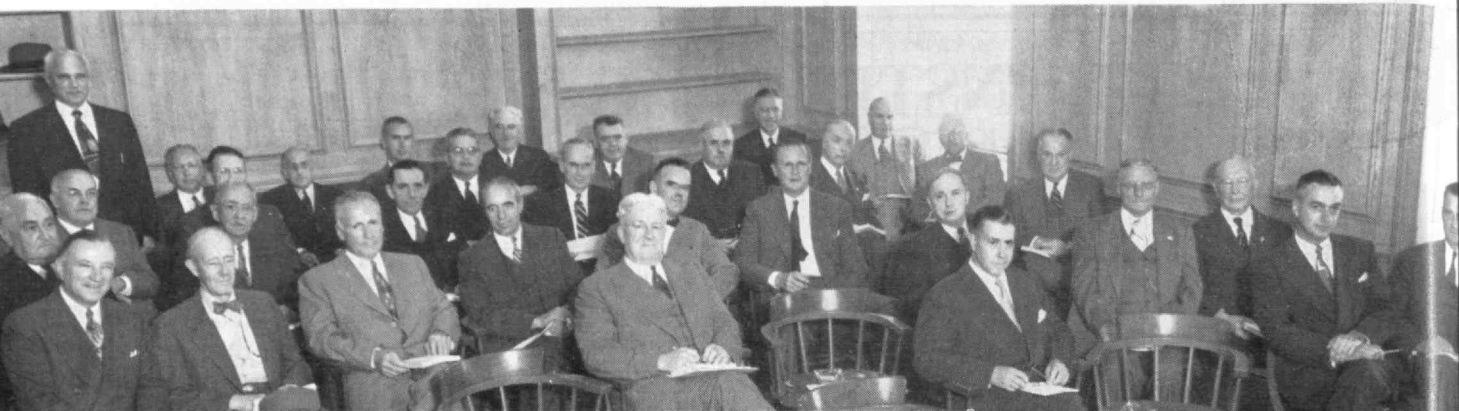
All undergraduate students in the Biology Department will take at least one course in the Division of Biochemistry, and graduate degrees in biochemistry will be offered in connection with the division's research activities.

Born in Winamac, Ind., Dr. Buchanan attended high school in South Bend, and was graduated in chemistry from DePauw University, in 1938. He was awarded the master of science degree from the University of Michigan in 1939, and the Ph.D. degree in biochemistry from the Harvard University Medical School in 1943. After three years as instructor and assistant professor in biochemistry at the University of Pennsylvania Medical School, he studied for two years, as a National Research Council Fellow, at the Medical Nobel Institute in Stockholm.

Returning to the University of Pennsylvania in 1948, Dr. Buchanan was made associate professor in 1949, and professor in 1950. He is a member of Sigma Xi, and of the American Society of Biological Chemists, and was the recipient, in 1951, of the American Chemical Society's Eli Lilly Award in Biological Chemistry.

Financial Review

THE financial status of the Institute was reviewed at the meeting of the M.I.T. Corporation on October 6, by Joseph J. Snyder, 2-44, Treasurer, who reported gains, over the year 1950-1951, in total volume of operations, in total funds invested, in investment income, and in plant value, but a decline in income from tuition for the third consecutive year.



Fay Photo Service, Inc.

The Corporation Meets

What may well be the first group photograph to be taken of members attending a meeting of the M.I.T. Corporation was made at the last meeting of that administrative body on October 6. Photographed at this meeting, in approximate left-to-right

order, are: (Front Row) James R. Killian, Jr., '26, President, Walter H. Gale, '29, Joseph J. Snyder, '24-44; (Second Row) John M. Hancock, Harlow Shapley, Harry J. Carlson, '92, Rudolf F. Haffenreffer, '95; (Third Row) Robert T. Haslam, '11, William Emerson, William L. Stewart, Jr., '23, Thomas D. Cabot, William A. Coolidge, George W. Merck, Everett S. Coldwell, '15; (Rear of Illustration) Louis S. Cates, '02, B. Edwin Hutchinson, '09, Karl T. Compton, chairman [standing], Julius A. Stratton, '23, Walter J. Beadle, '17, Redfield Proctor, '02, John R. Macomber, '97, Pierre F. Lavedan, '20, Crawford H. Greenewalt, '22, Edwin D. Ryer, '20, Bradley Dewey, '09, Donald F. Carpenter, '22, Alfred T. Glassett, '20, Ralph Lowell, Thomas C. Desmond, '09, Thomas D'A. Brophy, '16, Raymond H. Blanchard, '17, and Horace S. Ford.

The Treasurer's Report deals with M.I.T. finances under the general headings of Operations, Funds, Plant, Gifts, Investments, and General, from which the following has been extracted:

The total volume of operations in 1951-1952 was \$32,518,000 as compared with \$23,469,000 in 1950-1951 and an annual average of \$21,303,000 during the five years 1947-1951. Due primarily to a single large project, net research contract revenues rose to \$23,489,000 from \$14,419,000 in the preceding year. The volume of academic operations and auxiliary activities decreased moderately to \$9,029,000 from \$9,050,000. . . . Income from tuition declined for the third consecutive year, but this reduction in income was offset by an increase in gifts and other receipts used for current expenses and an increase in income from dormitory operations and other auxiliary activities.

The invested and other funds of the Institute on June 30, 1952, were \$60,632,000 at book value and on June 30, 1951, the funds were \$56,818,000. The net increase in the funds during the year of \$3,814,000 was equivalent to 92 per cent of the net addition of \$4,135,000 to the funds in the preceding year. For the year 1951-1952 the net increase consisted of increases of \$2,461,000 in the endowment funds, \$1,581,000 in invested funds for current purposes, \$812,000 in other classes of funds, and a decrease in building funds of \$1,040,000.

The book value of the plant of the Institute was \$31,364,000 on June 30, 1952, and \$28,578,000 on June 30, 1951. Additions to plant during the year were represented by expenditures of \$2,765,000, and special repairs and space changes included in operating expenses were \$1,088,000, a combined total of \$3,853,000. In 1950-1951, plant additions were \$4,364,000 while special alterations were \$209,000, a total of \$4,573,000. The near completion of the Metals Processing Laboratory, the interior renovation of the Sloan Building, and the expenditures for construction in progress on the John Thompson Dorrance Laboratory together made up more than 85 per cent of the addition to the dollar value of

the plant during the fiscal year. Construction in progress on June 30, 1952, required further estimated expenditures of over \$1,000,000 which has been set aside and included in the building funds at the close of the year.

The gifts, grants and bequests of \$6,953,000 received during the year included payments of \$1,998,000 toward subscriptions by alumni and friends of M.I.T. during 1948-1951, to the Development Program. Gifts of \$4,955,000 were from sources other than maturing pledges, with the partial distribution from the bequest of Mrs. H. Sylvia A. H. G. Wilks of \$1,645,000 and the Research Fund for the School of Industrial Management of \$1,000,000 making up more than half of the gifts received over and above the contributions flowing from the Development Program.

Endowment gifts for designated purposes of \$341,000 included the initial payment of \$150,000 by the Webster Foundation to establish the Edwin S. Webster Professorship in Electrical Engineering and \$134,000 for endowed scholarship funds. Mrs. Wilks's bequest, the Development Fund, a distribution from the estate of Arthur J. Conner and a further contribution from the Ford Motor Company Fund were among the unrestricted gifts received. Two million and ninety-six thousand dollars out of the total unrestricted gifts of \$2,851,000 was added to the endowment funds. The Alumni Fund with a total of \$140,000 and contributions from the Alfred P. Sloan Foundation of \$1,275,000 are a part of the gifts received for designated purposes and invested with other funds of the Institute.

Grants from companies in the industrial Liaison Program were \$1,110,000 in the total contributions of \$2,094,000 received for current purposes in 1951-1952. During the year under review \$839,000 in grants was allocated to the support of the current program in education and research, and \$365,000 was added to funds for immediate use or to meet subsequent expenditures. Gifts for current use applied to current operations continue to be a major source of operating revenues.

(Continued on page 106)

BUSINESS IN MOTION

To our Colleagues in American Business . . .

It is sometimes asked whether distribution costs would not be reduced if purchasing were direct, eliminating distributors. The answer is that if this were practical, the forces of competition would have brought it about long ago. The fact is that the factory-to-distributor system evolved in response to the need for it. Distributors provide the most efficient and economical way yet found to give fast local service. Take the case of a machine shop wanting a few hundred pounds of brass rod; the rod mill would find it prohibitively expensive to seek the business, check credit, make up such a small order, and ship it. The distributor, on the other hand, can do this and make a profit, because that is his kind of business, in which he is a specialist. A factory cannot hope to approach his speed, economy and efficiency on the smaller orders.

By combining the estimated demands of his market, let us again say for brass rod, the distributor is able to give the mill an order of attractive size, which it can handle profitably. The distributor's services in stocking goods, selling, assuming credit risks, filling and shipping many local orders are generally recognized. There is another aspect of the work of the distributor that is less well known. It can be referred to as his stabilizing influence. Just as many brooks join to make a mighty river, so distributor sales to customers in thousands of cities and towns help produce a steady flow of business. This in turn aids the manufacturer to maintain employment, retain skilled

workers, buy raw materials advantageously, keep overhead down. Stability of production, to which distributors contribute, favorably influences the prosperity of our country, because everybody benefits from steadiness in production and marketing.

Revere advertisements in trade and technical publications contain this line in the signature: "Distributors Everywhere." These distributors were selected for their ability to serve their customers, and were also spotted geographically so

that no matter where you are in this big country of ours, there is a Revere Distributor within easy reach. In every other industry you will find similar distributor systems, linking producers with fabricators or retailers.

It is interesting to note the scope of a metal distributor's operations. He must have considerable capital, own or rent a large warehouse or warehouses, deal with thousands of individual customers, stock

tens of thousands of items, cut standard stock into special sizes, employ salesmen who are experts in various lines, publish catalogs, advertise, keep in close touch with the markets in his territory for various goods, buy skillfully, keep meticulous stock records, operate trucks, and serve as a central clearing house not only for products, but for information about them. A distributorship is a large and complicated business which renders an essential and economical service and makes profits in proportion to its performance. It is a vital link in American business.



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THE INSTITUTE GAZETTE

(Continued from page 104)

Total investment income in 1951-1952 was \$2,618,000, a slight increase over the previous year when investment income was \$2,583,000. A somewhat smaller proportion of income was used for current expenses in the year ended June 30, 1952, with \$1,334,000 allocated in the Statement of Income and Expense, but a greater proportion was added to fund balances for redistribution against current expenditures and this was \$763,667 for the twelve-month period. Added to the unallocated investment income reserve was \$520,000, bringing this reserve at the close of the year to \$1,297,000 or more than half of the income on the General Investments of \$2,411,000 for the year ended June 30, 1952. Continuing the practice of allocating the greater part of dormitory and other operating income to the reserve for investment amortization and allied purposes brought this reserve to \$318,000 by the addition of \$121,000 during the year.

The endowment funds of the Institute have grown from \$33,238,000 to \$41,249,000 during the ten years ended June 30, 1952. Over 75 per cent of the increase in endowment of \$8,011,000 in this decade was added during the past three years. Less than half of the new endowment received since 1942 was given as endowment and more than 50 per cent was represented by appropriations of unrestricted funds.



Francis C. Fuerst

John Chipman

... Head of the Department of Metallurgy admires the Luigi Losana Gold Medal presented to him at the opening of the Sixth Italian Congress on Metallurgy which was held in Genoa during September. The medal was awarded by the Italian Metallurgical Association in recognition of Dr. Chipman's outstanding achievements in the field of metallurgy.

Industrial Liaison Appointees

THE appointment of Thomas Cantwell, Jr., '48, and of Eugene B. Skolnikoff, '49, as Industrial Liaison Officers at the Institute has been announced recently by William R. Weems, '35, Director of the Industrial Liaison Program.

Mr. Cantwell received the degrees of bachelor of science and master of science in Chemical Engineering from M.I.T. in 1948, and 1949, and the degree of master of business administration from Harvard University in 1951. While studying at the Institute he also attended the Engineering Practice School at Oak Ridge, Tenn. Mr. Cantwell has been associated with the Buffalo Electro-Chemical Company and the Procter and Gamble Company, and prior to his M.I.T. appointment he served as a chemical engineer with the Cambridge firm of Ionics, Inc. He is a junior member of the American Institute of Chemical Engineers.

Mr. Skolnikoff received the degree of bachelor of science and master of science in Electrical Engineering from M.I.T. in 1950, and the degree of bachelor of arts from Oxford University, where he studied under a Rhodes Scholarship in 1952. While studying under the Institute's co-operative program in Electrical Engineering, Mr. Skolnikoff served with the General Electric Company. He has also been associated with the Servomechanisms Laboratory at M.I.T. and with the High Voltage Institute at Upsala University in Sweden.

Council Opens New Season

FOR the first meeting of the season, and the second to be held in the new Faculty Club, 147 members and guests attended the Alumni Council meeting on October 27. As President of the M.I.T. Alumni Association, Edwin D. Ryer, '20, opened the 291st meeting at 8:00 P.M. by introducing the guests at the head table, and announcing that the day marked the 99th birthday anniversary of William P. Atwood, '76, oldest living member of the Alumni Council.

Resolutions for the late Samuel S. Dearborn, '84, were read by Professor Emeritus Charles E. Fuller, '92, and were accepted by a silent rising vote.

Donald P. Severance, '38, Secretary, reported that between May 28 and October 27, visits by 25 members of the Faculty or staff had been made to 35 M.I.T. clubs at points as far away as Montreal, Portland, Ore., London, Zurich, San Francisco, Barcelona, Honolulu, Hong Kong, and Los Angeles. Mr. Severance made visits to nine clubs, and H. E. Lobdell, '17, Executive Vice-president of the Alumni Association, was runner-up with visits to clubs in four foreign capitals and four cities in the United States.

The Alumni Association closed its fiscal year on June 30 with expenditures of \$480 in excess of income budgeted from the Institute and earned on merchandising items. The two most significant items contributing to the deficit were a loss of \$1,580 on the M.I.T. Calendars, and an additional loss of \$826 for Alumni Day. The Technology Review turned over to the Alumni Fund \$10,754 on its operations for

(Continued on page 108)

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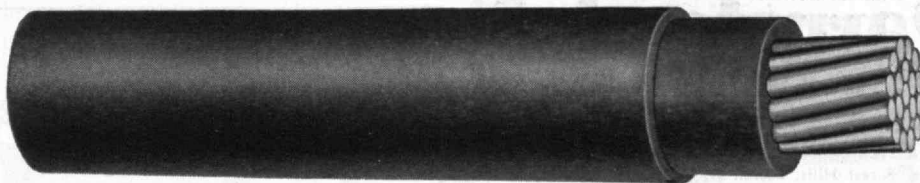


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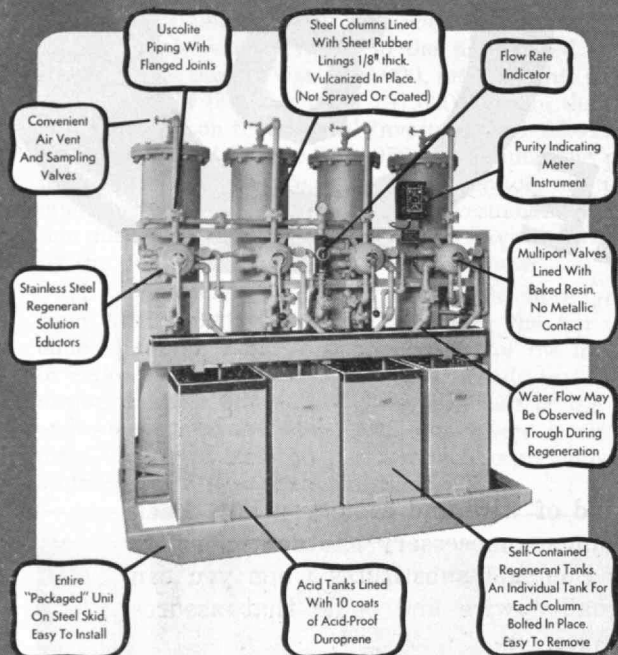
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THE INSTITUTE GAZETTE

(Continued from page 106)

Volume LIV, an amount slightly less than that for the preceding volume.

To assist Royal Barry Wills, '18, chairman, and Stanley C. Dunning, '17, cochairman, in planning the Midwinter Meeting, Donald W. Kitchin, '19, William H. Carlisle, Jr., '28, and Russell Hastings, Jr., '34, were named.

Malcolm G. Kispert, 2-44, Executive Assistant to the President, spoke on recent developments at the Institute, since both President Killian and Dr. Compton were out of town. Mr. Kispert spoke on the work of the Admissions Office in extending the number of visits to secondary schools through the help of 28 younger members of the Faculty; of the establishment of the Freshman Advisory Council and the Institute's research program for the government. The latter two topics have been summarized on pages 42, 56, and 62 of the November, 1952, issue of *The Review*.

President Ryer then called upon F. Leroy Foster, '25, Associate Director of the Division of Industrial Cooperation, to describe the Institute's activities in the field of nonmilitary, sponsored research. The Division is responsible for handling the business phases of contract research which may be restricted as to patents, publication of results, or methods in which funds are to be spent, but the actual research is conducted under the direction of the Institute's Faculty.

As examples of the work now going on under the Division, Dr. Foster mentioned that: (1) the Servomechanisms Laboratory is developing controls for a new respirator which, unlike the iron lung, will enclose only the chest and abdomen of victims of infantile paralysis; (2) the Acoustics Laboratory is investigating painless and harmless means of probing for brain tumors through the use of ultrasonic waves; (3) the Department of Food Technology is developing methods of cold sterilization of penicillin, streptomycin, surgical sutures, and food products to replace high-temperature sterilization techniques; (4) as part of a program extending over the past decade, the Institute's Radioactivity Center is working with the Children's Hospital to determine injury to bone structure resulting from exposure to radioactivity; (5) a team of five engineering specialists,

(Continued on page 110)

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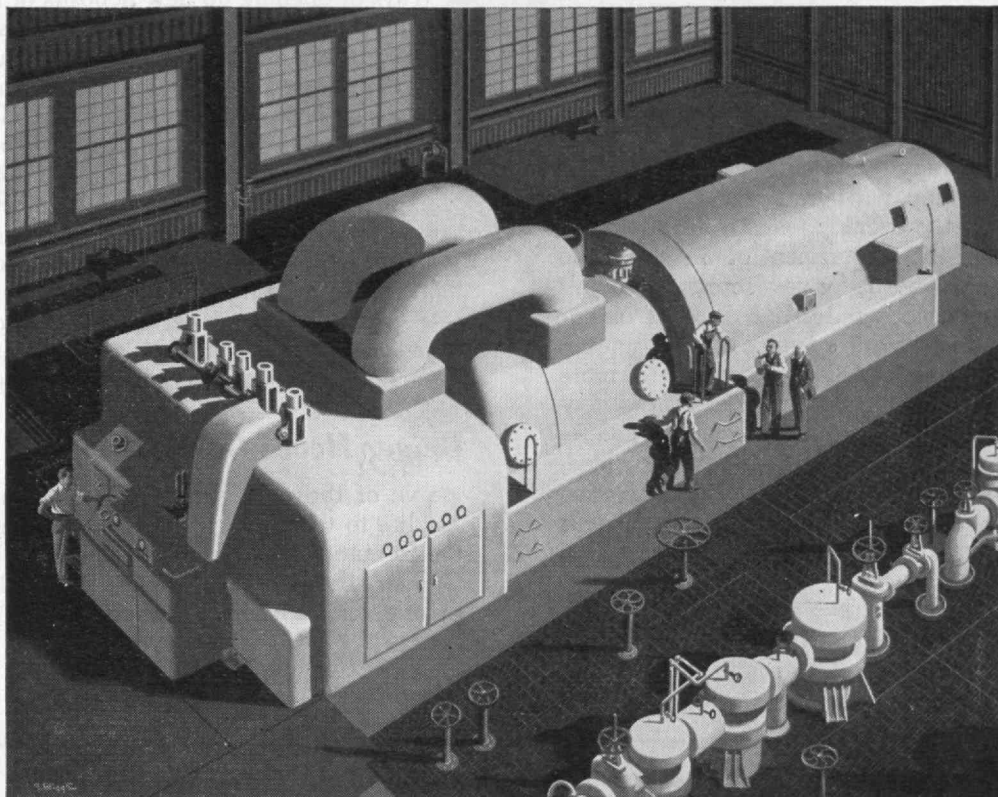
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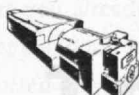
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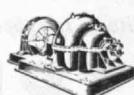
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THE INSTITUTE GAZETTE

(Continued from page 108)

headed by Professor Murray P. Horwood, '16, of the Department of Civil and Sanitary Engineering, is being sent to the University of Rangoon, under the Mutual Security Agency, to assist that University's engineering faculty in its teaching and research programs; (6) in co-operation with the Lahey Clinic and the Massachusetts General Hospital, Dr. Hugh F. Hare, in the M.I.T. High Voltage Laboratory, is providing roentgen therapy treatments for from 40 to 50 cancer patients per day, with gratifying results.

Final speaker of the evening was Professor Robert R. Shrock, Head of the Department of Geology, who discussed the nation's needs for new sources of metals and fuels. The enormous industrial demand of our nation requires the constant opening of new sources of raw materials; it emphasizes the necessity for more and better trained geologists, geophysicists, and geochemists. The national demand for such raw materials as iron, copper, aluminum, manganese, lead, zinc, and tin is high, and while domestic production and capacity could be raised to meet national needs in some cases, the country will have to depend on imports and newly developed sources for other raw materials. Dr. Shrock also pointed out the need to develop adequate sources of materials used in new

applications, especially for defense purposes. Germanium, titanium, mica, and quartz fall in this classification. So, too, do such trace elements as osmium, iridium, and ruthenium, whose use is limited by supply. The demand for coal is fairly stable and the rapidly increasing needs for natural gas and crude oil can be met by providing sufficient incentive.

Ways of opening up new deposits of raw materials are of concern to geologists, engineers, economists, and financiers alike. Basically few, if any, shortages exist if price is no object, but many known deposits will not be worked until there is sufficient economic incentive to warrant reasonable return on the required capital investment. In the finding and developing of new deposits, the geologist will be aided, in increasing degrees, by the geophysicist and the geochemist. It is the aim of the Department of Geology (whose name is being changed to the Department of Geology and Geophysics) to meet national needs, in finding new sources of raw materials, by training men well rounded in geology, geophysics, and geochemistry.

Geiger Heads G.B.C.B.L.

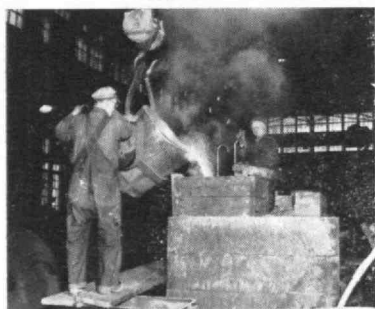
ONE of the most significant steps in adding new life to the Boston collegiate baseball situation is the formation of a formal league to be known as the Greater Boston Collegiate Baseball League comprising teams from Boston College, Brandeis Uni-

(Continued on page 112)

ELECTRIC BOAT

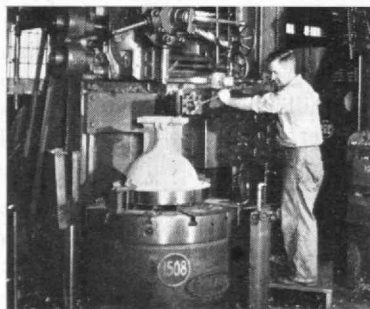
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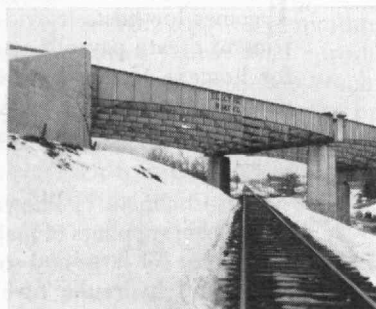
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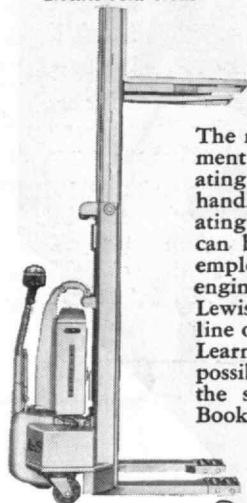




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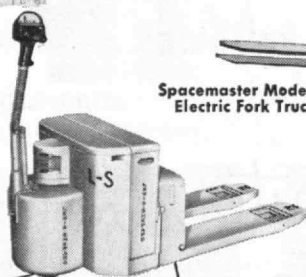
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THE INSTITUTE GAZETTE

(Continued from page 110)

versity, Boston University, Harvard University, M.I.T., Northeastern University, and Tufts College.

A meeting of the League's executive committee, which includes athletic directors of the member universities, has named Ivan J. Geiger, Director of Athletics at M.I.T., the League's first president and Herbert Gallagher of Northeastern its secretary-treasurer. League games will commence this next season of 1953 with the exception of one or two members who may only compete in one game with other members due to prior schedule commitments. Full operation of the League's schedule, with plans for home series between all teams, will start in the 1954 season.

It is hoped that the new league will foster the game of baseball as a collegiate sport. Many can recall local collegiate baseball contests that filled to capacity the college stadiums with competition among the local schools making baseball one of the most popular collegiate sports. Prospects of a highly competitive league, based on past local contests, should provide the Boston area with a strong and interesting league.

It has been agreed that the 1953 championship of the League be determined on a percentage basis, with the team making the highest percentage of wins and playing the most games in the League declared the winner.

Sir Richard Livingstone Lectures

SIR RICHARD LIVINGSTONE, Vice-Chancellor of Oxford University, England, delivered a series of two notable lectures under the auspices of the School of Humanities at M.I.T. on November 6 and December 4.

Sir Richard, who is Carnegie Visiting Professor of Classical Literature in the Department of English and History during the current term, spoke on "The Meaning of Civilization" on Thursday, November 6. His subject on Thursday, December 4, was "Towards a Moral Philosophy." Both lectures were given in the Library Lounge of the Charles Hayden Memorial Library.

Distinguished among English-speaking scholars everywhere for his understanding of the classical mind and his stalwart defense of humanistic studies as a preparation for useful modern life, Sir Richard was named president of Corpus Christi College at Oxford in 1934. He was educated at Winchester College and at New College, Oxford, and since then has been associated with Eton College and Queens University of Belfast.

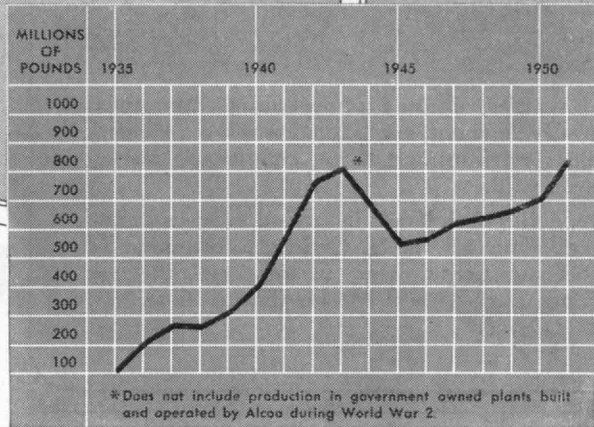
Sir Richard holds D.Litt. degrees from Cambridge, Belfast, Durham, Manchester, Toronto, and Pittsburgh, and is an honorary LL.D. of Dublin and St. Andrews Universities. He is a commander of the Legion of Honor, and has the Order of the King Haakon VII Liberty Cross. He is widely known as an author of scholarly works on philosophy, education, and modern life.

(Continued on page 114)

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This is an aluminum window, one of four million that will go into buildings in 1953. Twenty years ago, it was just an idea in the mind of an Alcoa development engineer. Ten years ago, only a few thousand were made annually. Now, production is increasing at the rate of over half a million a year. This is just one of a torrent of new uses for aluminum which means that Alcoa must continue to expand. Consider the opportunities for you if you choose to grow with us.



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THE INSTITUTE GAZETTE

(Continued from page 112)

Geography and International Affairs

LESLIE MUNRO, Ambassador from New Zealand to the United States, was the guest of the Institute on October 8. Under the auspices of the School of Humanities, Mr. Munro spoke before several student groups on the effects of geography on international affairs. The M.I.T. Student Lecture Series Committee sponsored a discussion of this subject by Mr. Munro in the Charles Hayden Memorial Library Lounge at 5:00 P.M., to which all students were invited. Later, Mr. and Mrs. Munro were honored at dinner at the Club of Odd Volumes by John E. Burchard, '23, Dean of the School of Humanities and Social Studies, and Mrs. Burchard.

Mr. Munro, whose appointment as ambassador was announced late in 1951, served for nine years as editor of the New Zealand *Herald*, a leading New Zealand daily newspaper. He was a member of the Council of Auckland University, the Senate of the University of New Zealand, and the Auckland Grammar School Board, of which he later became chairman.

A graduate of Auckland University, Mr. Munro has served as lecturer in law and, in 1938, as dean of the Faculty of Law at that institution.

Air Force R.O.T.C. Conference

A PARTY of academic deans and professors of air science and tactics from four Greater Boston colleges took part in an Air Force, Reserve Officers' Training Corps orientation conference at the Air University, Maxwell Air Force Base, at Montgomery, Ala., on October 15.

Attending the one-day conference, at which 28 states and territories were represented, were Dean William G. Sutcliffe and Colonel James W. Brown, Jr., of Boston University; Dean Robert B. Watson and Colonel Frank P. Bostrum of Harvard University; John E. Burchard, '23, Dean of the School of Humanities and Social Studies, and Major Joseph F. Gricius, Jr., of M.I.T.; and Dean Henry P. Burden and Colonel Robert P. Hardy of Tufts College.

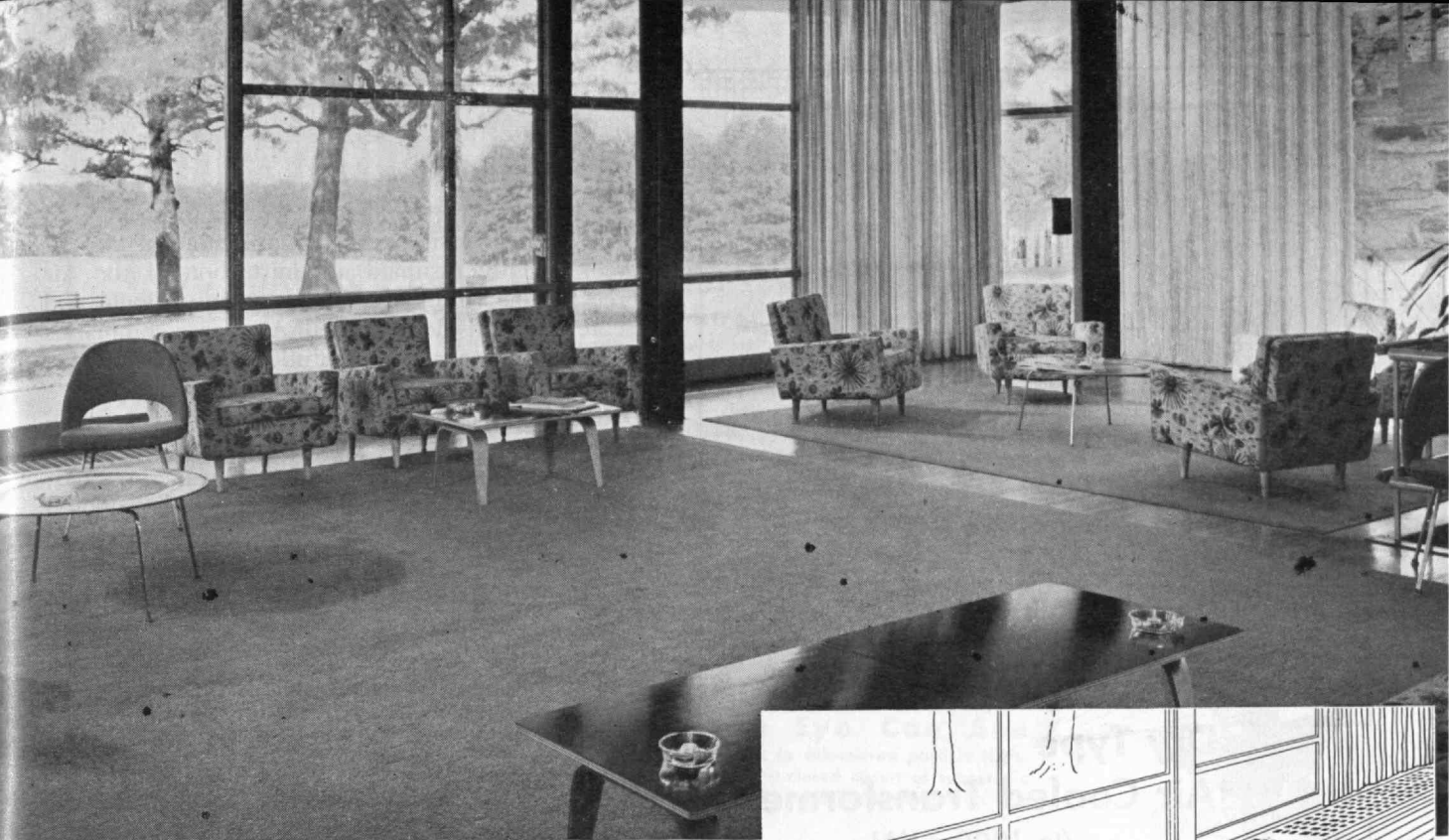
(Concluded on page 116)

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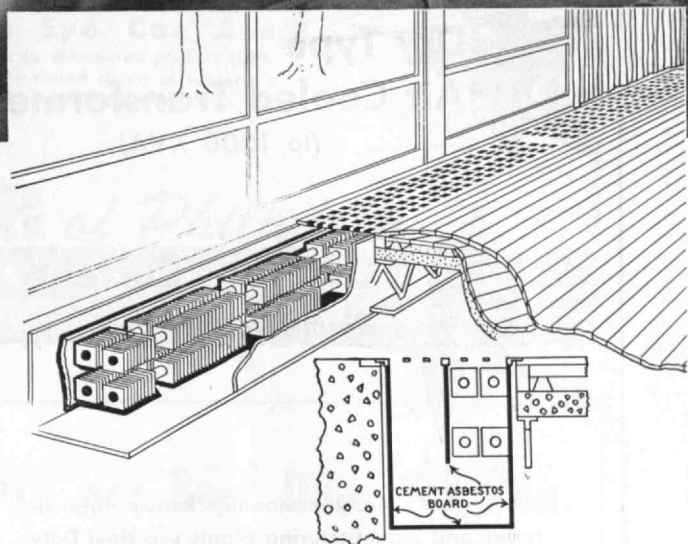
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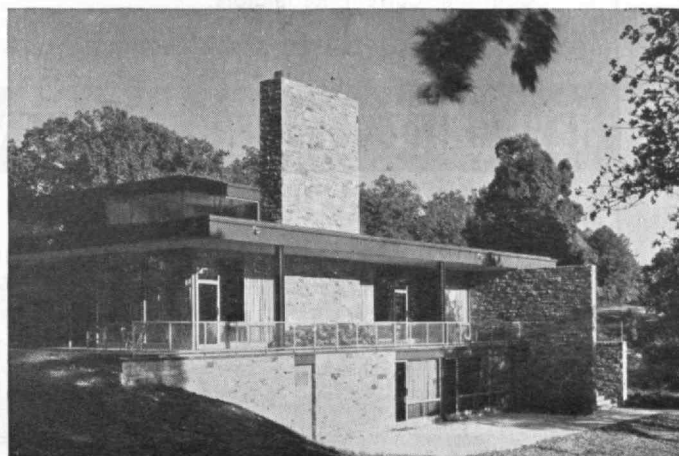
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THE INSTITUTE GAZETTE

(Concluded from page 114)

The Air University, educational system of the Air Force, recently assumed administration of the Air Force R.O.T.C. program. Its many educational and research missions now serve all Air Force commands and approximately 200,000 students throughout the world.

Brigadier General M. K. Deichmann, commandant of the Air Force R.O.T.C. program, explained that the purpose of the conference was threefold: (1) To acquaint educational executives with proposed changes and improvements in future operation and administration of the Air Force R.O.T.C. program; (2) To review the new Air Force R.O.T.C. course of instruction to be inaugurated in the 1953-1954 school year; (3) To emphasize plans of Air Force R.O.T.C. Headquarters to conduct a carefully developed R.O.T.C. program which will be mutually beneficial to the supporting institutions and to the Air Force.

Co-operation

THE Mutual Security Agency of the U.S. Government has awarded their Certificate of Co-operation to the Department of Building Engineering and Construction for furnishing technical assistance to foreign teams of engineers, architects, and contractors.

THE TREND OF AFFAIRS

(Continued from page 88)

Speculation on the cause of this outstanding corrosion resistance in an alloy containing as much as 88 per cent iron was not long delayed after Brearley's announcement. As early as the 1830's, Michael Faraday had implied that the nonreactivity or "passivity" of iron in concentrated nitric acid was due to an oxide film. Stainless steels had properties analogous to passive iron; therefore, it was natural to adapt Faraday's suggestion that an oxide film was the source of so-called stainless qualities. Faraday's views soon gained wide acceptance, for his concept was easy to grasp; even the men in the mill understood it.

It is well known that the natural oxide film on aluminum can be made more protective by anodizing, a process of electrolytically oxidizing the metal in sulfuric acid or a similar electrolyte. This process increases the film thickness from about 100 angstroms (0.4 microinch) to as much as 250,000 angstroms (0.001 inch). But with the stainless steels, the anodic process did not work, nor have similar approaches succeeded in improving their corrosion resistance. From recent experiments, it seems that there is reason for this lack of success.

According to an alternate theory for the corrosion resistance of stainless steels, the primary cause of passivity is not an oxide film, but rather a gas or ion (adsorbed) film closely associated with the metal sur-

(Continued on page 118)

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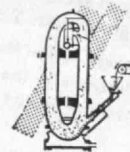
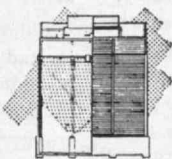
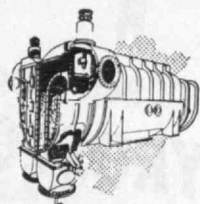
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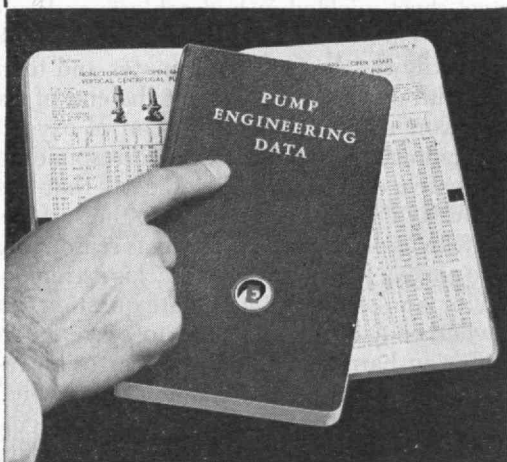


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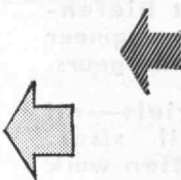
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THE TREND OF AFFAIRS

(Continued from page 116)

face of the order of an atom or molecule diameter in thickness (a few angstroms). This thin film is proposed as protecting the base metal, not by interposing a barrier, but by the satisfaction of chemical affinities of the metal, and by setting up a negative electric charge at the outer surface. Evidence is provided to support this view. Since adsorbed films are not necessarily improved by anodizing and by similar surface treatments, the relative lack of response of the stainless steels compared with aluminum is understood.

The main difference in the supposed oxide and adsorbed films lies in the relative thickness of the effective film and the mechanism of its influence on the corrosion rate. The oxide film theory claims a layer thick enough to act as a diffusion barrier. Supporting evidence is obtained by isolating the film, accomplished by immersing the metal into reagents like iodine or bromine dissolved in methyl alcohol. This loosens the film and "floats" it to the surface where it can be seen and examined. The adsorbed film theory, on the other hand, ascribes the primary corrosion resistance to a much thinner film which cannot be handled or seen. Any thicker films, isolated by the chemical process cited above, are considered to be of secondary importance and not necessary to the normal corrosion resistance.

Actually, how thin is the film on stainless steels? Herbert H. Uhlig, '32, Associate Professor of Metallurgy, and his co-workers in the Institute's Corrosion Laboratory, have set about to answer this question. Their study of the mechanisms of corrosion and corrosion control has been in progress for several years and has thrown considerable light on modern ideas of corrosion resistance. Work has been sponsored by the Office of Naval Research and the Shell Oil Company.

In one series of investigations, it was shown that a stainless steel sheet, pickled in hydrochloric and sulphuric acid and later exposed to aerated water, took up oxygen rapidly for the first few minutes and then more slowly with no further change at the end of six hours. The maximum was 0.27 microgram of oxygen per square centimeter of true surface, corresponding to the fully passive condition. This indicates that less than two atom layers of oxygen adhere to the surface.

In accord with earlier estimates, it seems reasonably clear that the passive film on stainless steel is extremely thin. If the film is an oxide, the legitimate question can be raised whether it is thick enough to serve as an effective diffusion barrier matching the corrosion resistance of the stainless steels. The amount of oxygen, on the other hand, corresponds to the order of magnitude of a monolayer predicted by the adsorbed film theory. These experiments, therefore, are consistent with the latter point of view, and passivity and corrosion resistance in the stainless steels accordingly can be considered to have their primary source in such adsorbed layers on the surface.

If this conclusion is valid, the mechanism of passivation of stainless steel by oxygen is no different than

(Concluded on page 120)

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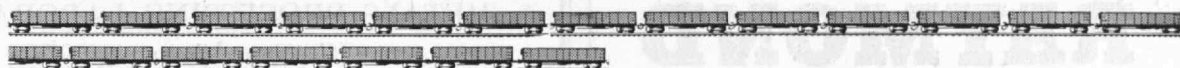
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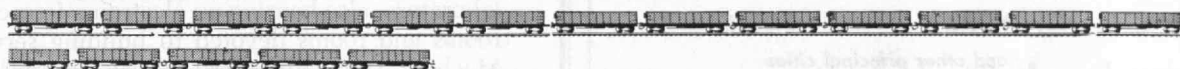
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THE TREND OF AFFAIRS

(Concluded from page 118)

that by carbon monoxide where adsorption, heretofore, has been the only reasonable explanation for the corrosion resistance of stainless steel in hydrochloric acid saturated with this gas. What is true of oxygen and carbon monoxide seems also to be true of other substances that cause passivity, including nitrates and chromates. All of these substances are classed as compounds with high chemical affinity for the alloy, but reacting only slowly (high activation energy) to form chemical compounds such as metal oxides. The thicker films, therefore, sometimes observed and successfully isolated, are apparently formed by reaction of the adsorbed films with the metal (stimulated, for instance, by high temperatures, polishing, abrading, or halogen ions plus water), and have relatively less to do with the observed corrosion resistance and stain-free qualities of the stainless steels.

METALS PROCESSING LABORATORY

(Continued from page 92)

to an office, a tool room, specimen room, and gauge laboratory, also housing an electron microscope, wash rooms and rooms devoted to building services. The Machine Tool Laboratory is well equipped to give students in the engineering courses at the Institute a good introduction into the operation and properties of metal cutting tools. On the ground floor are modern lathes, milling machines, drill presses, and similar tool-cutting equipment. The equipment is similar to that found in manufacturing plants, and is capable of precise operation. In contrast to the belt and shaft drive which was common practice when the Machine Tool Laboratory was first established in Cambridge, each machine is electrically driven and under the control of the individual operator. This equipment is all modern. In some cases it represents choice selections of war surplus material; other equipment has been donated or loaned by industry. In addition to a substantial array of machine tools, a complete selection of small hand tools, cutting tools, gauges, and measuring instruments are available.

(Concluded on page 122)

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METALS PROCESSING LABORATORY

(Concluded from page 120)

Another machine tool laboratory is located on the first floor. This floor also contains a research laboratory in metal cutting, a tool room, a cutter grinding room, wash rooms, and seven offices. A loading platform and freight elevator entrance provide access for delivery of heavy equipment.

The second floor contains one large and three small metal working laboratories, a laboratory for metal testing, an instrument shop, a ready room (for preparing lecture-demonstration material which can be quickly wheeled into the auditorium), and storage rooms. Another machine tool laboratory and three small research laboratories for metal working are also included. The second floor also provides entrance to locker rooms, and to the two lecture rooms. The smaller of the lecture halls seats about 70, whereas the larger can accommodate approximately 190 persons. Both lecture halls are so arranged that machine tools can be brought in for working demonstrations; they can also be used as regular classrooms.

On the third floor may be found two general research laboratories, three laboratories devoted to powder metallurgy and welding research, a radiographic room, preparation room, rough polishing room, specimen preparation room, etching room, chemical laboratory, metallographic and photographic room, and photographic and radiographic darkrooms. In addition, one large classroom, and eight offices are to be found on the third floor. Entrance may also be had to both of the lecture halls from this level.

The top floor, as has already been stated, contains a foundry laboratory, with transformer room and motor generator room for supplying power to the electric arc and induction furnaces. Small rooms are also devoted to die casting, a sand testing laboratory, a pattern shop, pattern and lumber storage, foundry tool storage, flask and sand storage, and offices. A demonstration and teaching room is available for instruction in foundry work and in welding, and two laboratories are devoted to welding operations. There is also a brazing and silver soldering laboratory, and six small arc-welding booths.

The penthouse includes a lounge complete with kitchen facilities. It is anticipated that an important use of this room will be to cement student-faculty relations by enabling both groups to learn to know the other better in an informal way, socially, after regular classes.

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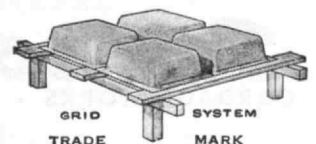
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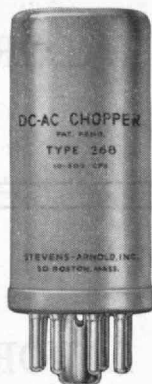
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METAL PROCESSING AT M. I. T.

(Continued from page 100)

not to benefit in proportion to the attention needed; so teaching and texts for the undergraduate are tuned to the tempo of the student who is slightly above average. Still another assumption is the human weakness to require (1) being told what is to be taught, (2) being taught, and (3) being told what has been taught; this requires a three-dimensional attack which is done without too obvious repetition of a principle. Essentially it involves (1) a careful outline of the course, (2) formal treatment of theory and laboratory accentuation of practice, and (3) critical summaries at appropriate times. Courses 3.11 and 3.12 have proved difficult to teach adequately since so much work is to be covered. It is necessary to develop both philosophy and fact to (1) make a student want to learn a subject entailing a variety of different detail, and (2) present the information in a logical manner. Accordingly, these courses comprise the combined efforts of many men. This has the advantage that the student has opportunity to meet and to know men from whom he may elect to do advanced work, and gives him the benefit of specialized knowledge and enthusiasm. This approach has had a telling effect, if post-course student interest is a criterion. It has also proved eminently successful to employ postgraduate students as laboratory and recitation instructors. Not only has this been popular with the neophytes, but the student instructor obtains invaluable training in speaking and in organizing his thoughts. Usually the instructor is a man working for his doctor's degree; so the training helps immeasurably when he meets his peers in oral examination — one of the most awesome hurdles of the doctor's degree. Recitation classes and laboratories are broken into 15 or 20 man-groups to provide individualized attention. Such practice requires many willing hands; but there is never a dearth of instructors who are anxious to serve. The success of this pedagogy rests, of course, on use of experienced teachers in lectures and laboratories, and on detailed supervision over the younger instructors. In an effort to become acquainted with all 100-150 men in class, the lecturer has a large seating chart which enables him to call each student by name, and to match the name with the proper face. This has proved an effective key in student-teacher relations; it is a distinct pleasure to be able to say "Hello, Jim" when you pass Jim Smith on the campus.

(Concluded on page 126)



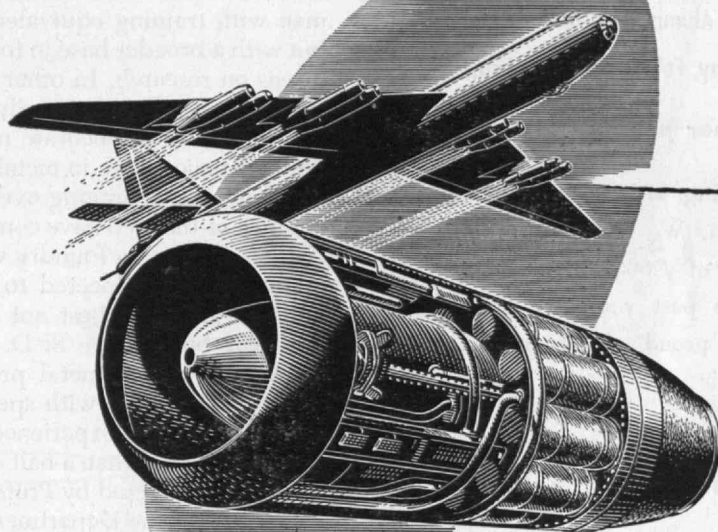
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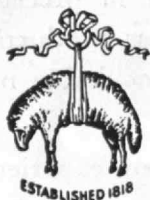
METAL PROCESSING AT M. I. T.

(Concluded from page 124)

So much for the undergraduate teaching program. The graduate program follows the usual course of accommodating men for S.M., Sc.D., and Engineer degrees. The Engineer degree is a fairly new one adopted by the Institute in 1949; it is designed to prepare men with training equivalent to that of a doctorate, but with a broader base in formal courses and less emphasis on research. In other words, it is a degree designed to fit a man primarily for production.

The caliber of doctorate men who have elected to do their major work in metal processing has been one of the most encouraging overtones to date. A preponderance of the men have come from the upper quarter of their classes. In foundry work, for example, which might be least expected to attract doctorate candidates at all, or at best not necessarily the top men, this year boasts nine Sc.D. candidates. The current awakening of the metal processing industry to the need for engineers with specialized training may be compared to that experienced by the chemical engineering field less than a half century ago, which movement was pioneered by Professor Emeritus Warren K. Lewis, '05, of the Department of Chemical Engineering at M.I.T. It may also be compared to the enormous impact, of Dr. Chipman's so-called "Chemistry at 1600" on the steelmaking industry. The Metal Processing Division of the Department of Metallurgy is doing its best to follow in the able footsteps already made at this institution in other fields.

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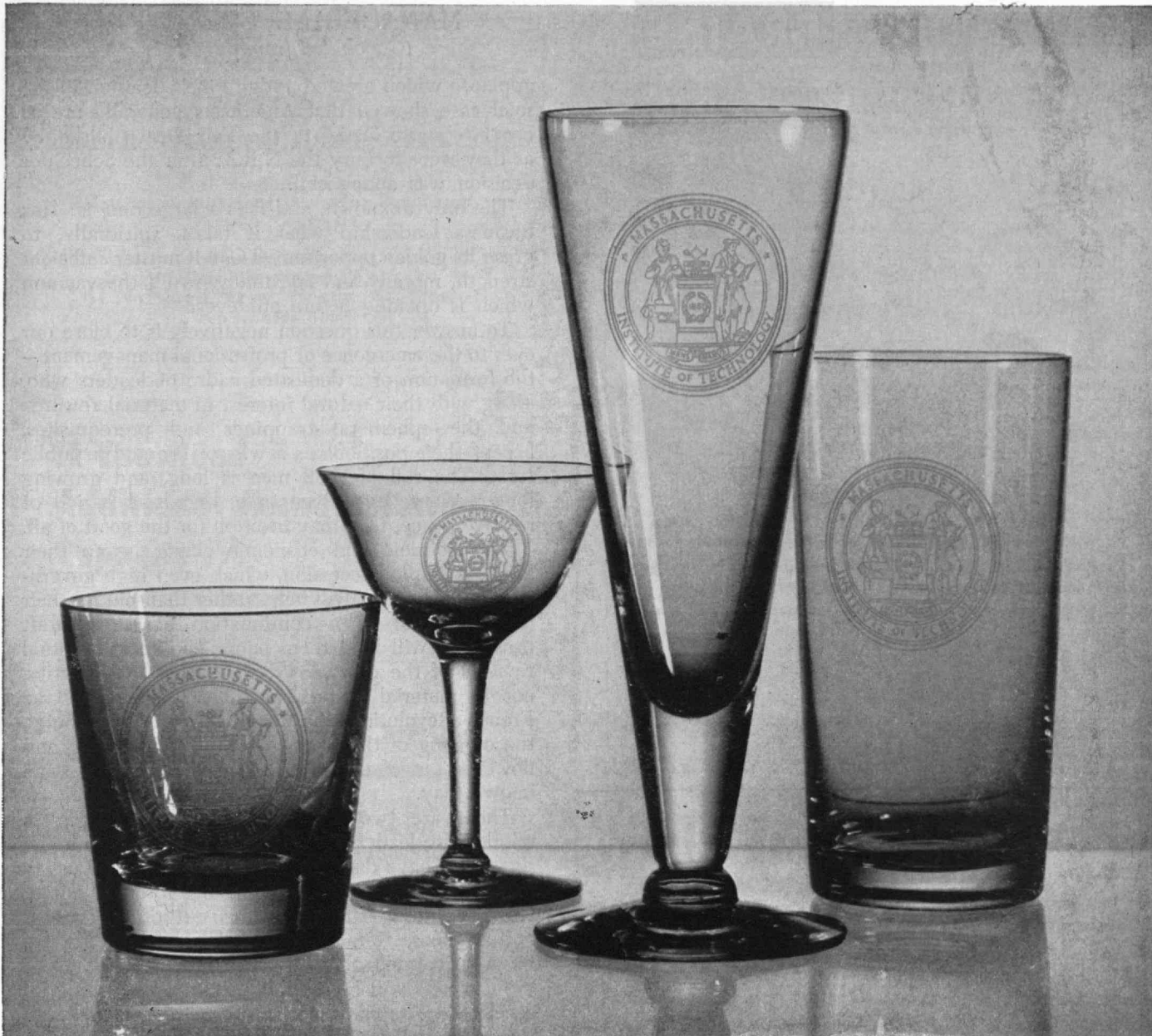
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MANAGERIAL EVOLUTION (Concluded from page 102)

applause which greeted Judge Pine's decision in the steel case showed that Americans generally are as eager to write "finis" to the Fair Deal philosophy as they were to bury the N.R.A. after the Schechter decision was announced.

The only unknown, and it is a large one, is: Has business leadership what it takes, spiritually, to grasp its golden opportunity? Can it muster sufficient strength, morally and spiritually, to fill the vacuum which is opening before our eyes?

To answer this question negatively is to close our eyes to the emergence of professional management—the formation of a dedicated cadre of leaders who, along with their natural interest in material rewards and the ephemeral trappings and prerequisites, accept their positions as a way of life and a public trust. The roll of such men is long, and growing longer every day. Given time, that is, a period of relative peace, they may triumph for the good of all.

The political and economic climate is in their favor. A limited recession, which even high government officials fear, will help, rather than hinder their progress—just as a continuation of forced-draft prosperity will hold them back. The great spiritual revivals of the past have been rooted in adversity, not in material abundance. The Renaissance, the French Revolution, the settlement of the colonies, the opening of the western frontier—all sprung and flowered out of difficulties as black as any we can know today.

There are two important cautions to keep in mind. First, leaders must have followers. Even more, they must have disciples. Executive development, in its present limited sense of making foremen out of workers and department heads out of supervisors and trainees, is not enough. The torch, once lit, must be handed on. Otherwise it will go out, and the darkness will be total. Time is passing, and will accelerate. The first responsibility of the new leadership must be to seek out the companion spirits, the younger men and women who have the right attitudes, as well as the right aptitudes, for dedicated creative management leadership in the future.

Given this assurance of succession, the managerial evolution will continue and bear lasting fruit, and more of our younger men will enter the business world with an abiding faith that creative industrial management is a high calling.



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Robert H. Wittenauer, 1949

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(Concluded from page 96)

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Industry is responding to this over-all approach by requesting students with this training, by giving grants-in-aid to further fundamental studies in machine tools and metal cutting, and through research contracts to learn more about specific phases of the metal-working industry.

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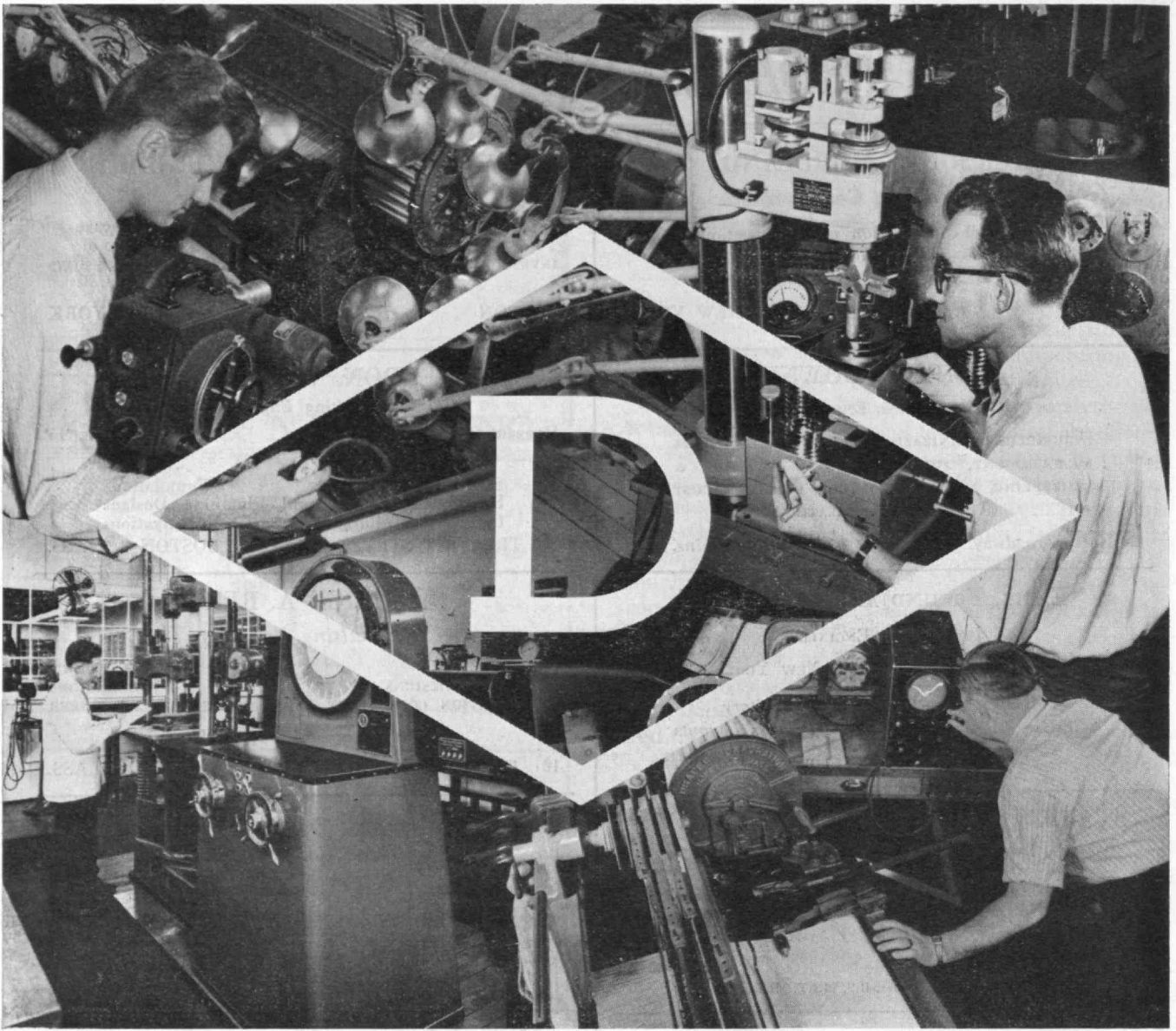
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The 1952 election is over. Why bring it up here? Because there are many points of similarity with giving to a worth-while cause. The man who gives has an active interest, just as does the man who votes. In expressing that interest, each becomes a participant, not a sideline spectator. Each becomes a working partner in a forward-moving enterprise. Each expresses his confidence in an institution — political, educational, or philanthropic — although the voter may not be in entire accord with some of the details or personnel. Basically, however, the most striking similarity is the importance of the individual and his gift or vote.

So, to rephrase that telling plea, when you consider giving to your Alumni Fund this year,

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Alumni AND Officers IN THE News

Gold Medal Group

CHARLES-EDWARD A. WINSLOW'98 is the recipient of one of the nation's primary medical honors. A special award of \$2,500 was given to Dr. Winslow during the seventh annual presentation of Lasker Awards by the American Public Health Association on October 21. The Lasker Awards are given to individuals and groups for outstanding contributions in research related to diseases which are the main causes of death and disability, and for distinguished service in the field of public health administration. In the citation accompanying the award, Dr. Winslow is referred to as "an inspiring leader, teacher, and ambassador extraordinary of public health for the nation and the world."

HERBERT T. KALMUS'04, President of Technicolor Motion Picture Corporation, is the recipient of the Samuel L. Warner Memorial Award for 1952, created to encourage the development of new and improved methods or apparatus designed for sound-on-film motion pictures.

The Wharton Alumni Society of the University of Pennsylvania presented the 1952 Gold Medal Merit Award for outstanding achievement in the business field to CRAWFORD H. GREENEWALT'22, President of E. I. du Pont de Nemours and Company. Mr. Greenewalt was presented the medal at the society's annual award dinner in Philadelphia, Pa., on November 17.

EGER V. MURPHREE'23, President of the Standard Oil Development Company, will be the 1953 recipient of the Industrial Research Institute Medal, the presentation of which will take place next April at the annual meeting of the Institute to be held in West Virginia. The medal has been awarded annually to honor "outstanding accomplishment in leadership in or management of industrial research which contributes broadly to the development of industry or the public welfare."

Top Men

HAROLD S. OSBORNE'08 has been elected president of the International Electrotechnical Commission, which is the international co-ordinating body in the electrotechnical standards field.

Tufts College has announced the appointment of LEIGHTON B. SMITH'19 to the post of professor and chairman of the Department of Chemical Engineering.

EARL H. EACKER'22, President of the Boston Consolidated Gas Company, was elected vice-president of the American Gas Association at the 34th annual convention of the association during October in Atlantic City, N.J.

EDWIN H. SCHMITZ'23 will head the Packaging Machinery Manufacturers Institute for the coming year. He was chosen president at the 20th annual meeting of the Institute at Hot Springs, Va.

ALBERT J. GRACIA'28 has been named as manager of the Goodyear Atomic Corporation, which will operate the new atomic energy installation in southern Ohio.

WILMER L. BARROW'29, chief engineer of Sperry Gyroscope Company, has been named vice-president and chief engineer of the company.

A \$50,000,000 American Cyanamid Company plant project in New Orleans, La., is being managed by GERALD J. FORNEY'40. Mr. Forney has worked on the direction and co-ordination of the entire program, from the initial plans for a plant to the actual building of the huge development.

For the Reading Public

CHARLES-EDWARD A. WINSLOW'98 is the author of a new book entitled *Man and Epidemics* (Princeton, N.J.: Princeton University Press, 1952, \$4.00). The book presents an account of the modern methods of health control and provides an historical and philosophical background for workers in the field of public health.

JEROME C. HUNSAKER'12 has just had published a book entitled *Aeronautics at the Mid-Century* (New Haven, Conn.: Yale University Press, 1952, \$3.00). Dr. Hunsaker presents his views on the past, present, and future of aviation and its impact on our civilization.

HORATIO L. BOND'23 is the author of A "First Book" on *Fire Safety in the Atomic Age* (Boston, Mass.: National Fire Protection Association, 1952, \$3.00), which sets down a program of A-bomb fire safety.

CHARLES KINGSLEY, JR., '27, and ARTHUR E. FITZGERALD'31 are coauthors of *Electric Machinery* (New York: McGraw-Hill Book Company, Inc., 1952, \$8.50).

In a new book entitled *Technology of Coated and Processed Papers* (New York: Remsen Press, 1952, \$15.00), MAURICE C. BEREN'28 and WILLIAM L. ABRAMOWITZ '35 are two of the contributors. Mr. Beren has written Chapter V; Mr. Abramowitz, with A. N. Stull and R. H. Mosher, has written Chapter XII.

ALVIN SLOANE'35, of the Department of Mechanical Engineering at M.I.T., is the author of *Mechanics of Materials* (New York: Macmillan Company, 1952).

FRANCIS B. HILDEBRAND'40 is the author of *Methods of Applied Mathematics* (New York: Prentice Hall, Inc., 1952, \$7.75).

For young people who find it necessary to help themselves get a higher education, there is an interesting little book out written by KENNETH C. RATHBUN'51, who managed to financially wade through college himself. Profiting by his experience, he has written *Working Your Way Through College* (published in Cambridge in 1951 through his own and his wife's ef-

forts), containing helpful information and advice to that hardy breed of students which must work and study at the same time.

"Mr. Chairman . . ."

At the 80th annual meeting of the American Public Health Association held in Cleveland, Ohio, from October 20 through 24, the following M.I.T. Alumni took part in the program with addresses at various sessions of the meeting: CHARLES-EDWARD A. WINSLOW'98; EARLE B. PHELPS'99; WILLIAM F. WELLS'09; WILLIAM J. ORCHARD'11; STANLEY H. OSBORN'15; AIME COUSINEAU'16; GORDON M. FAIR'16; MRS. CLAIR E. TURNER '26; ALFRED H. FLETCHER'21; BERNARD E. PROCTOR'23; ROLF ELIASSEN'32; JOHN T. R. NICKERSON'32; HAROLD S. ADAMS'34; JOHN E. KIKER, JR., '35; JAMES G. TERRILL, JR., '41.

JOHN A. DOREMUS, 4th, '38, spoke to the St. Louis section of the Institute of Radio Engineers on October 30 on the subject of "Transistors."

Obituary

HALL GLEASON'89, October 16.
MRS. ELIOT G. BRACKETT'95, March 28, 1949.

FRANK F. COLCORD'98, March 21.*
ROBERT S. DE GOLYER'98, October 11.
GEORGE W. TREAT'98, August 25.*
REUBEN S. HENDERSON'99, July 5.
CARL L. MORGAN'99, October 15.
FREDERIC S. GOODRIDGE'00, June 14, 1950.*

ROBERT C. SIMPSON'00, August 19.*
FIRMIN V. DESLOCE'02, May 18.*
HERBERT S. WALKER'02, June 12.*
LOUIS J. T. DECARY'05, June 4.*
CHARLES H. JOHNSON'05, October 16.*
EDWARD C. HAMNER, JR., '06, May, 1952.*
LOUIS A. THOMPSON'06, February 27, 1949.

SYLVESTER C. WOLFE'06, June 23.
HARRY N. BURHANS'07, September 6.*
LEON D. HOWE'08, date unknown.
HENRY V. MACK'08, date unknown.
HOWARD TORREY'08, March 5.
ROBERT E. DILLON'10, October 17.*
RAYCROFT WALSH'10, August 17.*
DAVID DASSO'12, May 18.*
FREDERICK A. W. DAVIS'15, September 10.*

ROBERT P. HACKETT'19, October 1.*
KENNETH N. GOWARD'21, September 9.*
MAURICE MASON'21, August 15.*
MELVIN J. FIRST'22, September, 1952.
FRED T. PATTON'24, April, 1952.
ROBERT R. CROSBY, JR., '25, August 12.*
KENNETH R. ERDMANN'28, June, 1952.
ROBERT J. HORN'28, August 30.
EDWARD C. RUBACK'29, April, 1952.
LAWRENCE P. ABARE'30, September 10.
LOUVIAN G. SIMONS'32, June 10.*
ANDREW P. REBORI'39, September 15.*
ANTHONY S. BOGATKO, JR., '49, September 28.

*Mentioned in class notes.

News FROM THE Clubs AND Classes

CLUB NOTES

The M.I.T. Club of Chicago

Because printing deadlines still prevent my telling in this December issue the story of the M.I.T. Club of Chicago's Fall Tonic Tour to French Lick during late October, that story will have to wait one more issue. However, at this writing, trip chairman Bob Faurot, 2-44, and his committee are completing details for the third of these fine speers.

All of our news from Chicago need not stress our more social activities, for the more serious matters are also well under way. Dick Meyer'50 and his Educational Counsel Committee met 39 strong for the first meeting of the season on October 9. They were able to report to Bud Bryant, 10-44, who was on from Cambridge, that the counselors who had been assigned last spring to the 45 "A" schools in the Chicago area had already established strong working contacts. In fact several of the committee had already represented M.I.T. at the annual College Day programs sponsored in the schools. This entire counseling program in the Chicago area very much resembles a well-organized sales campaign in which the schools contacted first and most often are those that offer the most promise of sending well-qualified boys to M.I.T. The other schools will be brought into the program as time permits. We in Chicago are proud of the way Dick Meyer and his committee are taking such a workmanlike attitude toward this important program. — ROBERT S. REEBIE'43, *Secretary*, Reebie Storage and Moving Company, 2325 North Clark Street, Chicago 14, Ill.

M.I.T. Club of New Hampshire

The Club held its annual meeting on October 2 at the Eagle Hotel in Concord, N.H. The Nominating Committee, headed by Charles Prichard'30 of Nashua, brought in the following slate of officers, which was duly elected: Henry B. Mitchell'32 of Amherst, President; Roger LeBlanc'36 of Manchester, Vice-president; Blaylock Atherton'24 of Nashua, Secretary-Treasurer.

The following members attended: Rupert E. Annis'48, Louis A. Arnold'42, Blaylock Atherton'24, Norwin Bean'94, Donald Burke, 2-46, Elmer R. Burling'30, Ormonde C. Clisham'14, F. Tenney Clough'38, Roger P. Congdon'33, James Doon'17, Paul W. George'22, Warren B. Gifford'23, Leigh S. Hall'14, Earl R. Hamilton'09, David A. Hoadley'48, A. R. Holden'23, Clarence G. Holt'17, Leon LaBombard'41, Philip LaBombard'47, Eugene Magenau'34, Philip Maher'17, Henry B. Mitchell'32, Marshall R. Newcomb'35, E. J. O'Connor'22, Albert E.

Page'22, Charles Prichard'30, Neil Putnam'34, John P. Rich'30, William H. Shuman'47, James Theodosopoulos'48, George W. Waymouth'16, Roger LeBlanc'36, Sing Leong'45.

Major Paul W. George'22, the genial host of the Eagle Hotel, had the banquet tables set up in the Rose Room, where a delicious dinner was enjoyed by the group. Professor Thomas F. Malone, 2-46, of the Institute gave us a most interesting and informative talk on weather forecasting and how accurate weather forecasts are most useful commercially. At the end of the talk, a long question period ensued and the party broke up about 10 P.M.

Your Secretary has been quite busy serving as acting governor of the state since August 1, while Governor Sherman Adams has been acting as chief of staff for General Eisenhower in his campaign for the presidency. — BLAYLOCK ATHERTON'24, *Secretary-Treasurer*, 142 Main Street, Nashua, N.H.

M.I.T. Club of Southern California

The fall activities of our Club started very auspiciously with a most pleasant meeting on September 17 with William R. Weems'35, Director of the Industrial Liaison Office at M.I.T., as our guest of honor at Carolina Pines. The Industrial Liaison Office is directed by four men who keep their respective fields intact and available for those firms who make grants, which amounts are fully deductible in computing income tax. The usual amount is \$10,000.00, depending on the size of the plant, and all laboratory developments are automatically and immediately reported to the co-operating firms whose processes might be improved.

The present plan is to limit the number of co-operating firms to 70. Out of the six or more major airplane factories in this territory, Douglas and North American are co-operating, and most of the time of Mr. Weems and Raymond L. Bisplinghoff, Associate Professor of Aeronautical Engineering, on their visit here, was in conference with the heads of the departments at Douglas. These surveys made by the high echelons in the Liaison Office determine what reports should be sent which would directly affect the aims of the co-operating plant.

This office does not undertake to solve any problems directly, as the grants go into a common pot with President Killian making the decisions as to how the money should be allocated; but any co-operating firm may write Dr. Killian about any problem and the Liaison Office will give the question its full resources in addition to the general prompt handling of all questions coming to the Institute.

The Liaison Office gets advance copies of all publications from all departments of M.I.T. and reproduces them in such quantity as the number of the co-operat-

ing firms interested would use. This office does not compete with private consulting firms, but, naturally, from time to time, would initiate research on general problems that would favorably affect factors in a large number of the co-operating firms, which have been ascertained in the physical surveys made by executives of the office, accompanied by the plant department heads.

The intent is to help the co-operating firms without impairing the teachers' efficiency, but giving value received in tangible form in the near future and also directly assisting those plants with long-range research plans.

This was one of the finest meetings ever held in this area due to the general good feeling generated by the prompt and honest answers of Mr. Weems to the forum, following the instructive addresses by him and Professor Bisplinghoff. Course XVI has 120 students plus 80 taking graduate work. About 30 enroll annually. The allied work, however, is much larger — over 700 students using the wind tunnels, gas turbines, and other equipment.

Among the Alumni present were: Folsom'01, Beebe'10, Schmiededeke'12, Mellema'15, Kallejian'16, Lunden'21, Hereford'24, MacCallum'24, Herrick'24, Davis'24, Kellem's'25, Thormin'27, Mangurian'28, Cook'30, Hiller'31, Golsan'34, DeWolfe'36, Finn'37, Karr'37, Maas'40, Ricker'42, and Crutcher'42, Goldson'47, Brakeman'48, Amon'49, Thomas'49, Toeperzer, 2-46, Cole'51, and many guests.

A message from Lobby from Madrid, Spain, was passed around and enjoyed by all. This was written in Spanish. The best part was the closing sentence: "Espero poderles ver en L.A. en el otonos que viene."

The meeting was planned by Program Chairman William H. MacCallum'24, managed by President Rockwell Hereford'24, and Treasurer Robert E. Hiller'31 checked the reservations. The next meeting plans to be most interesting and all Alumni are urged to remit the dues of \$3.00 to Robert E. Hiller'31, 922 North 10th Street, Burbank, with full address, telephone number, and class to insure a written notice. — HIRAM E. BEEBE'10, *Review Correspondent*, 1847 North Wilcox Avenue, Hollywood 28, Calif. PHILIP A. HERRICK'24, *Secretary*, 737 Terminal Street, Los Angeles 21, Calif.

Washington Society of the M.I.T.

The first meeting of the season of the Society was held on October 16, at the beautiful Pan American Union in Washington. Approximately 200 Alumni and their guests were present at the meeting, of which about 100 were Alumni.

A new experiment was undertaken as to the type of program for at least one meeting of the year. The whole subject of the evening was devoted to "The Lure of Latin America — M.I.T. Achievements

and Opportunity Among Our Good Neighbors." The theme was effectively presented by three distinguished international speakers: His Excellency J. Rafael Oreamuno, ambassador of Costa Rica, who spoke on "Technology in Economic Planning"; Juan Yriart of Uruguay, chairman of the Inter-American Economic and Social Council, who discussed "Technical Opportunity in Latin American Economic Development"; and Francisco Aguirre, American Roadbuilders' Association, who spoke on "M.I.T. and the Pan American Highway."

Latin American music and dancing was presented by a group of South American teachers who are currently students at the nearby University of Maryland. The group of teachers were from Bolivia, Peru, and Ecuador, one of the group a former commissioner of education in his country. Some of the dancing in the respective national costumes represented types of ancient dancing of the Indians in the Peruvian Mountains.

Following the meeting a reception was held in the Hall of Heroes where the guests enjoyed excellent coffee and mingled with the speakers and Alumni.

The program was intensely interesting and effective in bringing together the Alumni with various interests throughout the government agencies and the metropolitan area. We would not hesitate to recommend that other M.I.T. clubs undertake this type of program.

The list of Alumni attending the meeting is too long to enumerate in this report. However, the new officers of the Society for this season are the following: Albert F. Bird'30, President; Nicholas P. Stathis'29, Vice-president; H. E. Weihmiller'25, Secretary; Samuel H. Manian'22, Review Secretary; and Tan-Chih Lu, 2-44, Treasurer. Additional members of the Executive Committee are: Lawrence W. Conant'21, Gilbert B. Devey, 6-46, Louis J. Grayson'19, Richard McKay'21, Maurice E. Taylor'42, and Robert K. Thulman'22. Committee chairmen are: Program Committee, members selected for each meeting; Membership Committee, Louis J. Grayson'19; Reception Committee, Gilbert B. Devey, 6-46; Regatta Committee, Robert K. Thulman'22.

There are active developments by cooperative effort of most Washington alumni clubs of many universities to succeed in getting the Intercollegiate Rowing Regatta (Poughkeepsie Regatta) to come to the Potomac River in 1953. — SAMUEL H. MANIAN'22, *Review Secretary*, 5707 26th Street, North Arlington, Va. HORACE E. WEIHMILLER'25, *Secretary*, 129 West Leland Street, Chevy Chase 15, Md.

M.I.T. Club of Western Maine

The M.I.T. Club of Western Maine held a fall meeting at the Columbia Hotel in Portland on November 7. Alumni, their wives, and friends gathered for dinner, following which there was singing and then an address by Professor John B. Wilbur'26.

It is hoped that the interest from this meeting will warrant a similar one next spring. — EDWARD J. NORRIS'31, *Acting*

Secretary, 14 June Street, Portland, Maine.

CLASS NOTES

• 1892 •

Last spring I received a letter from Mrs. Newkirk (widow of our last classmate, Walter M. Newkirk), now living in Radnor, Pa., expressing a keen interest in the celebration of our 60th anniversary. Ever since the death of her husband in 1937 she has spent her summers at Northeast Harbor, Maine, and during her trips to and fro has visited several times the M.I.T. plant in Cambridge and is greatly interested in its impressive growth.

She and her husband attended the historical reunion at the time Technology moved to the new site in Cambridge and remembers transportation across the Charles on the barge carrying the president and staff with the charter and other documents; the vociferous demonstration against any suggestion of a possible merger with Harvard, and the talks about the mysterious "Mr. Smith," later known to be Mr. Eastman, who would contribute enough to keep M.I.T. independent.

She mentions a trip to Japan in 1929 with her husband and a party which included Billy Kales, Professor Richards, and Frank B. Jewett. The following is quoted from her letter: "As I have read from time to time in The Technology Review of the millions contributed to M.I.T. for various lines of research, including the recent grant of \$1,000,000 to M.I.T.'s new School of Industrial Management by the Alfred P. Sloan Foundation, I cannot help regretting that there were no such funds available for research when Walter received his M.I.T. diploma in 1892. It was a year of depression when business opportunities were few for young engineers, and Walter returned to M.I.T. to teach for a year.

"He was intensely interested in the then very young science of aeronautics; but he was unable to spend time in research, as he was obliged to earn his living in a remunerative job. It was not until after our marriage I learned of his keen desire to follow his inclination for research. It became manifest with the successful flight of the Wright Brothers at Kitty Hawk."

The Secretary also received a news item from the Boston *Herald* with a picture of Joshua Crane'92, Course VI, indicating his continued interest in golf and showing his special putter which he uses at the Dedham Country and Polo Club. This was featured in connection with an item regarding the winners of the Crane Bowl Tournament. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

• 1895 •

The annual alumni dinner, with "the stein on the table," would not be complete unless the Narragansett brew were on hand, as furnished by our classmate Rudolf F. Haffenreffer. This gesture is one

of his hobbies. Another of his hobbies is collecting cigar-store signs, the wooden Indian of past years, as noted in the following: "Rudolf F. Haffenreffer, board chairman of the Narragansett Brewing Company, Rhode Island, has an interesting hobby. He collects carved wooden Indians and trade symbols that merchants used to advertise their wares 100 years ago. Indian warriors in full headdress proffer bunches of cigars; a tailor's gentleman in checked coat and torpedo beard; a handsome mermaid from the stern of an old sailing ship; turbaned sultans; and even replicas of store owners are included in the collection. Recently the Charles Hayden Memorial Library of M.I.T. had an exhibit of Mr. Haffenreffer's samples of this ancient and vanishing American art. He started collecting wooden Indians in the '30's as a promotion stunt for the brewery. In 20 years he has bought scores of the figures for his private museum. There is no price on the collection, but the valuation on the museum display alone was \$25,000, and the price will mount as more and more of the old chieftains disappear from the United States scene."

Our mates, as a rule, do not tell your Secretary when they have a birthday; thus if he wants to know he must consult the class files. Now your Secretary will tell you of his 80th birthday last September first, going strong, and still the scoutmaster of 35 virile Boy Scouts. Best wishes. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

By the time this copy of The Review reaches you, our national election will be over. We hope you voted wisely and well, and are satisfied with the over-all results. The last word from Dan Bates indicates that both he and Mrs. Bates are making slow but steady progress toward health. He wishes to thank all those who were kind enough to keep in touch with him during the months following their serious accident. It is always satisfactory to hear from John Tilley who gives us an outline of the New York area and a bit of his personal contacts with the "discipline of life." We wish him well and may Mrs. Tilley make satisfactory progress.

Our Assistant Secretary is making his residence for a year at least at the Commander Hotel, Cambridge, and is beginning to enjoy some of the freedom which an improved arthritic condition implies. The local group as of this writing (October 16) are carrying on normally and making every effort to put the right man in the White House on November 4.

From the Lawrence, Mass., *Tribune* of September 15, we have a clipping concerning our classmate John Ashton, as follows: "John Ashton, 10 Buckingham Road, North Andover, prominent in New England architectural societies for many years prior to his retirement in 1943, observed his 91st birthday Sunday, marked by a reception at the summer home of his niece, Mrs. Mark L. Stillings, Shadow Lake, N.H. A native of Staley Bridge, Yorkshire, England, where he was born in 1861, Mr. Ashton has been a resident of Greater Lawrence since he was 14 years of age. At an early age he learned the trade of a me-

chanic under Joseph James, then master mechanic at the Pacific mills.

"After a period with the Mackay Sewing Machine Company, now part of the United Shoe Machinery Company of Beverly, Mr. Ashton entered . . . Technology for a special course in architecture. In the year 1893, Mr. Ashton opened an office in Lawrence and practiced his profession throughout the years until his retirement. In 1898, Mr. Ashton designed the Blakeley building and upon its completion moved his office to that location. Shortly thereafter, Albert S. Huntress became associated with Mr. Ashton and a few years later was made a partner. The firm, now known as Ashton, Huntress and Pratt still maintains offices in the Blakeley building."

A news release from the University of Wichita tells us about another '96 man: "An 1896 graduate of . . . Technology, Henry K. Sears, will start his 11th year on the University of Wichita mathematics faculty when registration starts Sept. 8 [1952] for the university's 57th academic year. Sears, a graduate of Chelsea, Mass., High School, is a former principal of the high school at Tewksbury, Mass. He taught mathematics at Trinity Hall, Washington, Pa.; Taunton, Mass., High; Allegheny Preparatory, Pittsburgh, Pa.; Hope High, Providence, R.I. He also is a former writer of textbooks for the American Correspondence School at Boston and an assistant engineer for the Auvers, Mass., water department."

The Secretaries would like to extend cordial wishes for a pleasant holiday season to members of the Class of '96. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge, Mass. FREDERICK W. DAMON, *Assistant Secretary*, Hotel Commander, Garden Street, Cambridge 38, Mass.

• 1897 •

One of the most enjoyable events of Ninety-seven's 55th reunion was the reading at the luncheon at the Algonquin Club of the letters to Harry Worcester from members who could not be present. Now listen, fellows, we all could have similar enjoyment if some of you would write letters, newsy or otherwise, to your Secretary for publication in these class news columns of *The Review*. If you will read over the news items from some of the other classes, you will note that many of their members write such letters, some of the letters being quite lengthy but very entertaining. Now please consider this paragraph as a personal request to each of you, asking for such a letter. The Secretary's mailman is a husky fellow and can stand the strain of delivering the extra amount of letters that we hope will result.

Ninety-seven can well be proud of its record of contributions to the Alumni Fund, as evidenced in the annual report of the Fund Board. With a total for the 1952 Fund year of \$2,563.50 from 30 contributors for an average of \$86.00 each, the Class tops the list of the non-reunion classes for such average. The total amount contributed by the Class since the Fund was started in 1940 is \$53,305.61. Other contributions to the Institute from class members or their estates were: Henry W. Ballou, \$100.00, John R. Macomber,

\$902.82, Walter A. Gleason Estate, \$2,000.00, Charles Eames Estate, \$33,-142.48, and the Edward A. Sumner Estate, \$10,393.53.

We are privileged to print from the columns of the Framingham, Mass., *Independent* of August 1, 1952, the following: "Tomorrow at Rockingham Park in Salem, N.H., Lou Smith, a sportsman in his own right, will honor a Framingham sportsman — John R. Macomber. This will come with the traditional running of the \$5000 Raceland Handicap at six furlongs, and with Algasir and many other top sprinters on the grounds, the race should be an exciting one. The Raceland is run each year to remind New England that it was John R. Macomber of Raceland who planted the seed from which have grown these modern, commercial tracks and that they are all indebted to him. Each year Mr. Smith takes this means of honoring Mr. Macomber as a great sportsman. Framingham is proud of Mr. Macomber not only for his achievements as a sportsman, but for the many other accomplishments that those who read this column are — or should be familiar. He is an officer of the Massachusetts Society for the Prevention of Cruelty to Animals — a lover of animals. The Angell animal hospital in Boston has been one of his favorites. In almost every cultural endeavor he has been a prime mover — a trustee of the New England Conservatory of Music, chairman of the finance committee of the Massachusetts Institute of Technology, director of the American Humane Education Society, director of the Boston Work Horse Relief Association, former president and chairman of the board of the Massachusetts General Hospital, and an officer in a long list of affiliated organizations and big business enterprises. Framingham honors Mr. Macomber, as does Mr. Smith, for these achievements, but more than anything else our community hails him as a good neighbor and citizen that he is. So, race fans, when you go to Rockingham tomorrow join with Lou Smith in the salute to a great sportsman." In business life Mr. Macomber is chairman of the board of the First Boston Corporation. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

• 1898 •

Through the courtesy of Ralph T. Jope '28, Director of the M.I.T. Development Program, we have the following information concerning our classmate, Frank F. Colcord:

"Frank F. Colcord was a director and former vice-president of the U.S. Smelting Refining and Mining Company. He was born in Boston, and after receiving his degree with our Class, he started his professional career as assistant to the superintendent of the Chicago and Aurora Smelting and Refining Company. Later, he was made chief clerk of the United States Metals Refining Company. In 1910 he became assistant to the vice-president of U.S. Smelting and Refining Company. In 1938 he became vice-president and manager of metal sales of that firm, a post he held until 1947. During World War II, he was a member of the advisory committees of the primary lead and silver producers

industries. A member of the Mining and Metallurgical Society of America, the American Institute of Mining and Metallurgical Engineers, the Electrochemical Society, and the Masons, he belonged also to the Lawyers Club in New York City. He was well known as a contributor to scientific journals. He leaves his wife, the former Mae Weir." Mr. Jope also advises that Frank named M.I.T. in his will to receive a quarter share as the residual beneficiary of a trust he had created.

The Boston *Herald* of August 26 printed the following, concerning our classmate George W. Treat: "Braintree, Aug. 26—Funeral services for George W. Treat, 77, of 56 Monatiquot Rd., an investment banker in Boston for 40 years, will be held tomorrow at the Russell Funeral Home at 2 P.M. He died yesterday at Massachusetts Memorial Hospital, Boston, of which he was a trustee. Born in Livermore Falls, Me., Mr. Treat was graduated from Hebron Academy, Hebron, Me., and Massachusetts Institute of Technology in 1898. He was formerly president of the Boston investment banking firm of E. H. Rollins and Son. He was vice president and trustee of Hebron Academy, trustee of the Fruit of the Loom Co., New York, trustee of the Livermore Falls Trust Co., and a member of the Algonquin Club, The Country Club, University clubs of Boston and New York, Chapeau Club of Canada, Boston Chamber of Commerce, Kora Temple Shrine of Lewiston, Me., and the Knights Templars. He was a 32nd degree Mason. He leaves his wife, Elsie R., and a sister, Miss Edith O. Treat of Livermore Falls. A second funeral service will be held Thursday at 2 P.M. in the Brown Funeral Home, Livermore Falls."

President Edgerly in his recent letter No. 11 has paid a fitting tribute to George and Elsie Treat. Another friend of the Treats, George T. Cottle, who knew them intimately, has been kind enough to send us the following tribute:

"George Treat, one of our best known and most popular classmates, died suddenly of a heart attack on August 25. His life work was mainly in the investment and financial field. He and Roger Babson actually started together. Later George went with the firm E. H. Rollins and Company, rose to be president in 1926, and chairman of the board up to 1931 when he retired. While active as a director in a number of concerns since then, his chief work was in taking care, gratis, of investments of many friends and dependents. Perhaps his most notable characteristic was his interest and zeal in helping others, particularly in their start in life. He put some 25 to 30 boys and girls through college, and often through professional schools thereafter. When Hebron Academy ran into difficulties in the early '40's after 140 years of existence, he went to its aid and with the help of another alumnus put it on its feet again; today it is more successful than ever. His numerous gifts to scores of others, many made anonymously, are almost too numerous to mention. George was extremely modest, lived a very simple life, and shunned publicity. We shall all miss him."

We do not wish to be repetitious in our news items, but the following, called to

our attention by Elliott Barker, speaks for itself. In *Time* of October 13, 1952, pages 67-68 is the following: "Sanitarian's Reward—While Charles-Edward Amory Winslow was a student at M.I.T. in the '90s, one of his teachers was a man dedicated to a relatively new idea: that the health of the people is a proper concern of governments. The teacher, William T. Sedgwick, has gone down in history as the father of the public-health movement in the U.S. In Manhattan this week, Pupil Winslow won a special (\$2,500) award from the Albert & Mary Lasker Foundation because he has fathered modern public-health practice, not only in the U.S., but around the world. Public health in Winslow's youth was largely limited to water supply and sewage disposal (both of which the Romans had been good at 2,000 years earlier), plus vaccinations against smallpox and faltering efforts to halt the spread of infectious diseases. Biologist Winslow, who lists himself as a 'sanitarian,' worked in the state health departments of Massachusetts and New York, then moved on in 1915 to a full-dress professorship in public health at Yale.

"For 30 years he gave graduate courses to physicians, physiologists, bacteriologists, epidemiologists, nutritionists, mental hygienists and engineers working on water supply, sewerage and housing, forever emphasizing how all these specialties met in the common purpose of protecting and improving the public health. Today, more than a thousand Winslow men are spread across the U.S., in city, county, state and national health agencies, and around the world, preaching his gospel that in the long run the price of health is far less than the cost of sickness. Now 75, and technically retired seven years ago, Dr. Winslow has not slowed down a bit. He still edits the *American Journal of Public Health*, has just finished the second of five volumes on public health. Says his Yale successor, Dr. Ira Hiscock: 'Winslow is still so young that young people go to him for new, young ideas.'

There is an extensive write-up in the *New York Times* of October 7, 1952, called to our attention by Lester, which covers essentially the same ground. Perhaps, Charles, you will conduct a symposium of "Youth in Old Age" or some kindred subject at the 55th. And, by the way, we wish to thank friends of the Class and classmates, who bring to our attention material concerning '98.

This is the last issue of the *The Review* prior to the holidays, and, accordingly, we will take this opportunity to wish all the boys and girls of '98 a very Merry Christmas and a very Happy New Year—and remember the 55th!—EDWARD S. CHAPIN *Secretary*, 463 Commercial Street, Boston 13, Mass. ELLIOTT R. BARKER, *Assistant Secretary*, 20 Lombard Road, Arlington, Mass.

• 1899 •

David Churchill's handcraft weaving industry at Berea, Ky., was the subject of an illustrated two column historical article in the *Detroit, Mich., News* for August 26. Churchill became interested in this brand of industry in a roundabout way. In 1901, arriving in India as a missionary,

he found that commercial textile mills had deprived some 20,000,000 hand weavers of a means of livelihood. He first learned the craft, then redesigned the native looms with the result that they turned out eight times as much work as formerly. With the outbreak of World War I, David returned to the United States and did his bit by designing a retractable landing gear, an automatic wing stabilizer and some valuable ideas in the design of the fuselage of aircraft. After the war, he became head of the Physics Department at Berea College, Berea, Ky. In the mountains of that state, he found conditions somewhat similar to those he had found in India. The area had many weavers who had inherited clumsy looms and home-made dye formulas from their ancestors. Churchill organized these independent weavers, set up looms, and started work in a modest way. He kept the native atmosphere by allowing these mountaineers to work barefoot, have music, and in other ways maintain their morale. Today Churchill's products are known everywhere. His textiles are recognized for their down-to-earth quality, warmth, sturdy weaves, bright colors, and simple patterns. The Detroit agency, opened four years ago, is stocked with baby wear, blankets, neckties, aprons, and so on. Credit for design goes to Churchill's wife, Eleanor, who has a natural flair for that kind of work. Today the Churchill Weavers Company grosses a half million a year.

Henrietta L. Graves, 90 last August, has had an interesting career. Born in Malden, Mass., she graduated from Framingham Normal School, attended Technology, the Marine Biological Laboratory at Woods Hole, Mass., and spent two years at Harvard summer school. Besides private teaching, she also taught at the Framingham Normal School, at the Taconic School for Girls at Lakeville, Conn., and at Howard Seminary at West Bridgewater, Mass. For 19 years she was a teacher at Hampton Institute. Since retiring she has lived at Cedar Grove, near Richmond Village, Maine.

Charles A. Smith, I, spent several weeks in Florida last January. As he lives in Atlanta, Ga., he doesn't have as far to go as the majority of us. In June, he headed west to visit his daughter in Dallas, Texas. From there he went to see his brother in Pasadena, making a side trip by auto to Mexico. While in Pasadena he had a heart attack and was in a hospital several weeks before he could travel back to Dallas with his daughter where he experienced a second attack. He was finally able to get back to his home in Atlanta where he is gradually improving. He describes his activities (?) as "doing nothing and resting afterward." Best of luck, Charles. He also reports that L. H. Turner, V, recently made his third trip to the altar. Maybe we can line up further details on Lawries' activities.—BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston, Mass.

• 1900 •

The death of Robert Coffin Simpson on August 19 has been reported from Groton, Conn., where he has lived for many

years. Born in Chelsea 73 years ago, he graduated from M.I.T. with us in 1900 from Course XIII, and began his work with B. B. Crowninshield in Boston. He designed some of the old Gloucester fishing schooners. In 1908 he became a draftsman for the Newport News (Virginia) Shipbuilding and Drydock Company. In 1911 he went to the Electric Boat Company at Groton, Conn., as naval architect in charge of hull design and resolved many problems in working out details of new designs from specifications. He was a pioneer and expert on submarine hull strengths. He took part in designing many of the commercial vessels constructed by his company, among them the *Nelseco II*, long used by the company as a ferry.

Bob had been a member of the Society of Naval Architects and Marine Engineers since 1903. He was also a member of the Propeller Club of the Port of New London, the U.S. Naval Institute, and the Thames Yacht Club. At a testimonial dinner in January, 1950, he received a message from Vice-Admiral E. L. Cochrane '20, chairman of the Federal Maritime Board and Maritime Administrator, on behalf of the M.I.T. Alumni Association, which read in part: "For the 50 years of your still active practice of your profession of naval architecture, you have demonstrated traits of sound engineering instinct and clear engineering imagination . . . in your 38 years of service for the Electric Boat, you have seen with your own eyes and had an active part in the development of the submarine for the United States Navy." He also received at that time a letter of appreciation from Rear Admiral David H. Clark, then chief of the Bureau of Ships. He is survived by two daughters, Kathryn and Eleanor Simpson; a brother, Horace C. Simpson, of Berkeley, Calif.; and his stepmother, Mrs. Lydia G. Simpson, of Norwich, Conn., who is 100 years old.

Word has been received of the death on June 14, 1950, of Frederic S. Goodridge, who graduated with us from Course II. We lost track of him a long time ago and have no information of his history since graduation.—ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

• 1901 •

I am glad to report that *The Review* will be sent to all members of the Class through this school year. This will make my work much easier when it comes time for the Class Letter in February.

I have three short clippings concerning the Bittings. Charles is president of the Duxbury Art Association and was prominent at their exhibition in August. He spoke to the youth group at Peterson parsonage in Duxbury recently. Peterson parsonage is the house in which Guy Peterson was born. It was left to the Unitarian Parish and is now the parsonage. Mrs. Bittinger is one of a number of ladies who sent flowers to the hospital at Camp Edwards in September.

From class data sheets left over from last spring, I report the following: Ed Seaver says: "I retired in '46 and have bought a place in Duxbury, and I agree

with some of the other fellows that I prefer the country life to the big city. I have a bungalow type so as to avoid stairs which become quite noticeable in your later years. There is quite a lot of land around the place so I am going in for flowers and a few vegetables. For recreation I play a little golf and swim. I still drive to Florida for the winter and look forward to dropping in on Phil Moore in Maryland. On arriving at Clearwater Beach in Florida, I see Al Higgins quite frequently. Milton Hogle phoned me while in Florida but I was out at the time, and I was sorry that he did not leave any address where I could contact him as I have not seen him for about 41 years."

The following is from Roger Wight's data sheet. "As you are well aware, I retired in 1947 and am now trying to keep myself out of mischief and to earn a few honest dollars (subject, of course, to the generous taxes imposed by our supposedly constitutional government) by selling or renting an occasional property here on Cape Cod. Recently had a letter from Carl Johnson from Zephyr Cove, Nev. Carl was one of my special buddies at M.I.T. and I wish we did not now live so far apart but will hope that we may both be alive and be able to attend and renew acquaintance at our 55th anniversary."

The Review office sends me the following: "Eugene C. Bauer, Jr., First Vice-president of Kensington Steel Company, Chicago, was elected a director of Pioneer Engineering Works at a board meeting in Minneapolis on July 28. Mr. Bauer succeeds Mr. Philip W. Moore [our classmate], formerly President of Poor and Company, and a member of that board, who resigned from the Pioneer board membership because of ill health. Pioneer Engineering Works and Kensington Steel Company are subsidiaries of Poor and Company, Chicago."

It would be fitting and of great help to the Secretary if some of you, who became new readers of The Review last year and who must now realize how interesting are the doings of your classmates, would send me some word of yourself no matter how commonplace it may seem to you. I cannot write interesting notes without material. — THEODORE H. TAFT, *Secretary*, East Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary*, 287 Oakland Street, Wellesley Hills 82, Mass.

• 1902 •

Information has been received from the Alumni Office of the death of Firmin V. Desloge on May 18, 1952. Desloge was a member of an old French family, long prominent in the life of St. Louis, where he had lived until he took up his residence in Santa Barbara, Calif., five years ago. The following sketch of his career is from the St. Louis *Globe-Democrat*: "He [Desloge] was a grandson of the first Firmin Desloge, who came from France in 1820 and entered the mercantile business in St. Francois County, Mo., with another pioneer Frenchman, Ferdinand Rozier. The grandfather, who died in 1856 also engaged in lead mining which, in those days, was carried on individually by landowners, in what later came to be known as the Lead Belt. Mr.

Desloge's father, Firmin Desloge II, founded the Desloge Lead Company about 1870. It was consolidated with the St. Joseph Lead Co. of Bonne Terre in 1883 but the father went back into the business by acquiring and developing the properties of the St. Francois Lead Mining Co. and the Mina. A. Joe mine.

"These became the basis of the prosperous Desloge Consolidated Co. of which Mr. Desloge [our classmate] was vice-president and active manager until it was sold in 1929 to the St. Joseph Lead Co. for \$10,700,000 cash. Thereafter, he became a director of that company, a position he held until recently. He was also interested in oil properties in Southern Illinois.

"With his brother, Joseph Desloge, St. Louis capitalist, Mr. Desloge was instrumental in carrying out the wishes of his father for the construction of Firmin Desloge Hospital, owned and operated jointly by the Sisters of St. Mary and St. Louis University. . . . Survivors include his wife, the former Rebecca Plummer of Nashville, Tenn.; three sons, Firmin Desloge IV, William and Theodore P. Desloge, and his brother." Desloge died in Santa Barbara.

Another death has been reported, that of Herbert S. Walker on June 12, 1952. Our class records have little information regarding Walker, but thanks to an article in the *American Chamber of Commerce Journal* of Manila, we learn that he was a native of Jacksonville, Ill., and attended the University of Chicago before studying at M.I.T. To quote the article: "He first came to the Philippines in 1903 as a chemist in the Bureau of Science, a position he held until 1910. During this period he wrote *The Coconut and Its Relation to the Production of Coconut Oil* (1906) and also his authoritative book, *The Sugar Industry in the Islands of Negros* (1909) which did much to interest Hawaiian capital in the industry here. He left the Philippines in 1910 to spend some years in Hawaii and also some time in Puerto Rico, always in connection with work in sugar both practical, in managerial positions, and theoretical as Professor of Sugar Technology, College of Hawaii, Honolulu.

"He returned to the Philippines in 1924 to become supervising chemist, then Superintendent of Operations of the Bank Centrals and concurrently Acting Manager of the Binalbagan Estate, Inc. which position he resigned in 1928 to become manager of the Philippine Sugar Centrals Agency. Later that same year he established his Tropics Products Company but the Philippine National Bank retained him as technical advisor for some years after." Walker was actively carrying on his business at the time of his death.

The following additional items regarding Church, whose death was reported in the April notes, have been received from Mrs. Church. "Albert's eldest son is the very well-known Thomas D. Church of San Francisco, landscape engineer and architect. A younger son, a World War II veteran officer, Dan R. Church, has graduated from Hastings College of Law of the University of California, and another younger son, Albert, Jr., is an execu-

tive at the Dodge plant in San Leandro and also a veteran."

A few statistics compiled by Bill Kellogg from the answers to the reunion questionnaires: "The average age was 72½, with a maximum of 81 which was omitted for statistical purposes but would have affected it but three months. Every member replying had been married. Of these 92 per cent had children and 92 per cent of those having children had grandchildren. As to size of family, the average of those having children is 2.7, with a maximum (W. R. Lewis) of seven and Driscoll, six. Of those having grandchildren the average is 5.3 with Joe Ballard the top scorer with 12, and Charlie Mixer and myself tied at 11." — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

• 1905 •

You have undoubtedly received Bob McLean's letter of October 15, asking for your contribution to the Alumni Fund. Notice of his appointment as class agent should perhaps reach you in a formal way, but Bob very graciously consented to fill the vacancy caused by the death of his very able predecessor, Grafton Perkins. Needless to say the old '05 spirit will respond not only to maintain the class reputation, but to aid the good cause and encourage Bob in his endeavor. Along similar lines we announce, also with much appreciation on the Secretary's part, of Harry Donald's formal acceptance of the chairmanship of our 50-year Gift Committee. Harry has had wide experience in an executive capacity with the Greater Boston Community Fund Campaign and similar projects. He is analyzing the setup, personally and geographically, and many will be asked to assist in this golden opportunity.

Notice of Chet Shaw's change of address to West Bridgewater, Mass., indicates completion of his mission in Turkey (November Review). Mrs. Ray H. White, notifying as to a change of address to Summerville, S.C., brings the hope of a change for the better in Ray's health.

From building reports we learn of Carlton Manter's appointment as architect for the new Bristol County (Massachusetts) Court House. Carlton has temporarily retired on account of his health. Here again is an indication of return of health, which we trust is permanent. Through Sid Strickland, we learn that Ros and Helen Davis have been making an extended trip to the Pacific Coast, which may mean the retirement he had contemplated.

The rest of the news for the month is less pleasant. Louis J. T. Decary, IV, died at Montreal, Canada, on June 4, 1952. Little has been heard from him since he left M.I.T. in 1903, but he apparently returned to Canada at the time and spent the rest of his life there. Charles H. Johnson, II, died at his home in Melrose, Mass., on October 16, 1952. Charlie, who left M.I.T. in 1903, entered the employ of the New England Mutual Life Insurance Company, specializing in insurance service to M.I.T. men; in fact he probably was the pioneer M.I.T. man in this field. Retiring from this work a few years ago, he served as secretary for the Boston Fed-

eral Savings and Loan Association, from which position he retired very recently. Many of the Class will remember his persistent circularizing, at its inception a novelty in the insurance selling game.—FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston, Mass.

• 1906 •

The *World Telegram* and the *Sun*, New York, of August 9, 1952, included an article by Edmour A. R. Germain (financial writer) entitled "Home Loan Bank Head Started as Railroader" which refers to our classmate, Nugent Fallon, who has been president of the Federal Home Loan Bank of New York since 1941. The *Secretary* is including the greater part of the write-up below as it is felt that it will be of much interest to classmates:

"Fallon came to the Federal Home Loan Bank from commercial and private banking, having served in various capacities for a decade with the First National Bank of Boston and the French American Banking Corp'n. He also engaged for six years in a mortgage banking business of his own here. Assets of savings associations in the country jumped past the \$20,000,000 mark this spring but in the 30's when the business wasn't so prosperous it was only natural that one of the men called to Washington to see what could be done about it should be Mr. Fallon. His first task there was to serve with the Home Owners Loan Corp., first as a special representative, then as assistant general manager and afterward as deputy general manager. That was in 1933. Originally set up by government to give relief to harassed home owners defaulting on their mortgages, mostly for reasons beyond their control, HOLC has since disposed of all the mortgages it acquired at no loss to the government. In 1934, Mr. Fallon became general manager of the Federal Savings & Loan Insurance Corp., corresponding in the savings and loan field to the Federal Deposit Insurance Corp. in commercial and savings banking. The U.S. Treasury owned \$18,963,000 of the \$28,126,426 of the capital of the Federal Home Loan Bank here when he became president. Under his leadership, the Treasury has been entirely paid back and all \$43,469,946 of the bank's capital today is owned by members. In just a little over 11 years of his administration, the bank's dividend rate has been doubled, its resources have quadrupled, its deposits have multiplied by 24 times, its reserves and undivided profits have tripled and its services generally much expanded. Member assets have also increased fivefold to 2½ billion dollars. Mr. Fallon did not begin his business career in banking. After graduating as civil engineer from Massachusetts Institute of Technology, he became division supervisor for Mexican International Railroad."

Classmates will be interested in an extract from a letter which the *Secretary* received from Chester Hofer, as follows: "We had a most interesting experience during our last days of our nine-month trip. We had embarked at Paris and had come down at Shannon for food and fuel.

While we were sitting there, comfortable after our steak dinner, another Pan American flight came in, bringing its long trail of passengers. 'Well, Lem, imagine seeing you here,' for it was Lem Smith who had just come in from London after attending a medical meeting in Madrid. We had a wonderful reunion, he telling us of the many interesting things the medical profession is doing around the world. To think that two flights originating in two different countries to bring us together in another, Ireland, was most unique. Doubt if such a combination will ever again be brought forth." This item will be of particular interest to classmates who attended the 45th reunion at Snow Inn, as the much traveled Hoefers and Lem Smith were present on that occasion. To inject a touch of formality into the record, Lem Smith is Dr. Lemuel D. Smith of Milwaukee, Wis.

The *Secretary* has recently received the 1952 report of the Alumni Fund and recommends it as interesting reading for all classmates. In this connection, it may be recalled that our June '52 class notes referred to the retirement of Henry Darling as class agent. The writer is very happy to inform fellow members of '06 that President Harold Coes has named as class agent Vice-president Sherman Chase, who has agreed to serve in both offices. Sherman is located in Boston as one of the partners in the consulting engineering firm of Metcalf and Eddy. He is much interested in class affairs and did effective work in the recent Development Fund Campaign. Pertinent to this subject, readers should be reminded about the 50-year gift which is now only a little over three years hence. From this year's Fund report it is assumed the gift should be in the order of \$50,000. It is not too early to start plans for your contribution now.

Members of the Class will be sorry to learn of the death of Ralph Patch's wife, Christine, who died on September 30. She had been a sufferer from arthritis for a number of years and for the last few years almost a helpless cripple. Her death was caused by internal complications. For several years she required constant attendance, and Ralph, who is retired, gave his entire time to her with a devotion which now should be a great source of comfort to him. The *Secretary* attended the services with Mrs. Kidder and, a few days later, called on Ralph at his new home in Stoneham, Mass., which he designed and built quite recently in consideration of his wife's condition and where he now lives with his daughter Alma. Mrs. Patch is survived by two other children, Mrs. Charlotte Sims of Harwich, Mass., and a son, Edgar, of Chicago.

Word has been received from the Alumni Office of the death last May of Edward C. Hamner, Jr., XIII-A, of Lynchburg, Va. Although listed as a member of '06, he was not included in my class list. The Alumni Register shows he obtained an S.M. in '07, hence it is inferred he chose to affiliate with that Class.—JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

Since preparing our class notes for the November Review, news of importance has come to me relating to one member of our Class. That man is Clarence D. Howe, Minister of Trade and Commerce and Minister of Defense Production for Canada, who, as stated in our notes in the November issue, is considered by vote of our Class as the outstanding member of the Class.

In the November notes, I stated that Clarence was to receive the Hoover Medal at a gathering in Chicago on September 10. That event actually took place, and the following story appeared in the *Chicago Daily News* of September 10, 1952: "C. D. Howe, Canada's engineer of plenty, received the world-wide acclaim of his profession on September 10, 1952. As 14th winner of the Herbert Hoover Medal, presented at the Conrad Hilton Hotel by the former United States president himself, Howe joined a distinguished group of the world's builders. He got there because he was good—engineering-wise and business-wise—and because he awakened a sleeping giant. By tempting, coaxing and threatening, Howe had spurred Canadian industry to a frenzy of action that has made Canada the 'new generation' among the world's industrial powers.

"With the vigor of a young man in a hurry, Canada today is ripping up the northland, harnessing its cold streams and grasping for its vast frozen resources. Her impatience to get things done reflects the personality of this onetime Massachusetts schoolteacher who learned how to build a good grain elevator. For Clarence Decatur, 'C. D.' Howe, who is now 66, first went to Canada as a graduate teacher of the Massachusetts Institute of Technology. He gave some advice regarding storage elevators to the Canadian grain commissioners and before long was in business for himself. He was a millionaire at 49, and a naturalized Canadian citizen. He was married, the father of five children and head of C. D. Howe & Co., the northland's foremost engineering organization.

"At the request of Prime Minister Mackenzie King, Howe took his slide rule to Ottawa, Ontario. He has been multiplying Canada's productive capacity ever since. Under his guidance, Canadian steel production climbed from 1,900,000 tons a year to 4,300,000 tons. Oil rose from 10,134,000 barrels to 47,834,000 barrels, making Canada the world's fifth largest producer. Canada already produces one-fourth of the world's aluminum and is vastly expanding her capacity. A development in British Columbia involves carving a giant power plant deep inside a mountain. Rich iron deposits in northern Quebec are being hauled out to new steel mills. Canadian foreign trade topped \$8 billion last year, a 10 per cent climb in 12 months. Coarse grain exports doubled. Five billion Canadian dollars, now more valuable than American dollars, were invested last year in new industrial capacity.

"Under Howe, Canada has become the world's new hunting ground of oppor-

tunity. Howe's government service began 17 years ago as minister of transport. During the war, he was minister of defense and supply. Today he is, officially, both minister of trade and commerce and minister of defense production. Unofficially, he is minister of everything. Howe has power to buy, build, allocate, ration, spend, expand and curtail. He is said to be the most powerful man in Canada. Prime Minister St. Laurent checks with Howe before any major decision. Parliament waits to hear from him how much money should be appropriated for aircraft production, hydro-electric dams or atomic development. Howe sometimes spends the money first, then tells parliament to pick up the check.

"One of the most phenomenal things about this stocky, direct-spoken engineer is that he gets away with it. Canadians are famous for their obstinate individualism. They aren't dictator people. But, as a short conversation with a few Canadians will demonstrate, they share Howe's impatience to get things done. That's the most important secret of his power. When Canadian steel companies balked at Howe's demand for increased production facilities, Howe threatened to put the government into the steel producing business. There was no cry of socialism. The steel companies simply got busy.

"During the war Howe actually did establish 28 'crown companies,' some of them in competition with private concerns. When the war ended, Howe returned 27 of them over to private business. He didn't haggle over the price so long as the new owners would guarantee to keep the companies in production. It is this emphasis on production that is Howe's economic philosophy. Production, he contends, will cure most economic ills by itself. It is this goal that has caused postwar Canada to cut corporate and excess profits taxes to a minimum. Howe wants no penalty for production. Enticing tax write-offs, on the other hand, are offered for plant expansion and new development. The Canadian treasury relies heavily upon consumption taxes to keep its budget balanced. Price controls and rationing, which Howe invoked during the war, were quickly removed after the war. Today the nation is embarked on a three-year defense program costing \$5 billion. It is plowing 20 per cent of its national income back into expansion. Despite this strain on the economy, Howe sees no need for a resumption of direct controls. He has been able to control inflation by production.

"Another reason why Canadians appear content to let Howe call the signals on their economy is their complete faith in his integrity. 'C. D.' resigned his position with C. D. Howe & Co., Ltd., the day he went into government service. He sold every share of his stock. Despite these severed connections, however, Howe refused to give the company a single dollar's worth of government business during World War II. When the company recently got a contract to build a government dock on the St. Lawrence and another to build an atomic reactor, Howe felt obliged to make a public explanation.

"Close associates of Howe say he will never become Canada's prime minister, although he perhaps could have the job for the asking. They say he lacks the patience to make a successful politician. He is likely to shake his fist at democratic processes when democratic processes stand in the way of getting a job done. He is as impatient with the government as he is with business when either cringes before progress. This is a fact with which Americans are becoming increasingly familiar these days. The Canadian engineer of plenty is reaching the point of exasperation over America's failure to join in building the St. Lawrence seaway. Howe feels that the project is vital to the continued economic growth of Canada. He cannot conceive of it being anything but beneficial, also, to the United States. As he did with reluctant Canadian steel companies, Howe is about ready to give Uncle Sam an ultimatum: 'Either you get moving, or I'll do the job myself.' And, as in the steel crisis, no one seriously suggests that 'C. D.' is bluffing."

On page 85 of *Life* magazine for October 13 is a first-class, full-page picture showing Clarence together with Prime Minister Louis St. Laurent and other Canadian cabinet members.

Look at pages 92 and 93 in *Life* magazine for October 27 for a picture of Sam Marx and his wife in their beautiful Chicago home.

We regret to report the death of Harry Burhans, who died on September 6 as the result of a cerebral hemorrhage. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1910 •

It is with deep regret that I have to announce the death of Robert E. Dillon and Raycroft Walsh. The following is from the *Boston Traveller* of October 17, 1952, and the Hartford, Conn., *Times*: "Robert E. Dillon, vice-president and assistant to the president of the Boston Edison Company, died today at his home at 100 Memorial Drive, Cambridge. A native of North Attleboro, born in 1883, the son of Louis and Emma Horton Dillon, Mr. Dillon was raised in Belchertown and educated at Worcester Academy, Williston Seminary and the Massachusetts Institute of Technology, graduating from M.I.T. in 1910. He joined Boston Edison in 1911 in the laboratory and testing branch. Transferring to the production department, he became its assistant superintendent in 1917 and superintendent in 1925. He was appointed vice-president in charge of production and engineering activities in 1937, and in 1942 was elected a director. Recognized as an authority on electric power plant construction and operation, he served as delegate to the World Power Congress at Paris in 1946."

"Raycroft Walsh, 64, vice-chairman of United Aircraft Corporation and vice-president and general manager of Hamilton Standard Propellers Division during its great period of growth and aeronautical development, died Sunday afternoon at Westerly, R.I., Memorial Hospital. He was born in Boston Nov. 14, 1888, and

after completing his preparation in the public schools he studied engineering at Massachusetts Institute of Technology and at Columbia University. While he was still a student at Columbia in 1910, he took a military competitive examination which gained him a commission as second lieutenant in the Coast Artillery Corps of the Regular Army. In 1917 he received the rating of airplane pilot after he had been transferred to the Army Air Corps. In 1929 he joined the young Hamilton Standard Propellers, then located in Pittsburgh, Pa., as vice-president and director. Under his leadership Hamilton made many contributions to the art of propeller design. In 1933 the Collier Trophy, given annually for the year's outstanding contribution to aviation, was won by the firm for perfection of the controllable pitch propeller, and subsequent development of the constant speed and quick-feathering types gained international recognition. During his years with Hamilton he was in charge of foreign sales, and his persuasion of the British to accept the constant speed propeller for their Spitfire and Hurricane planes is said to have been a leading mechanical factor in making them able to stand up to the German air attacks of World War II."

I have received a letter from Mrs. Earl Pilling telling me that her husband Earl is now in the hospital suffering from amnesia.

Cecil Blanchard writes that he is on a pension and that he has health, a happy home, grandchildren, and more little jobs than he can do in helping his neighbors and friends. Gordon Hawes writes that he is extremely busy with the Bechtel Corporation in San Francisco.

Alva Court from San Francisco writes as follows: "I have spent 40-odd years in a technical corps of the Navy, had a year's employment in a shipyard, was then called back to active service and sent to this city where I was a total stranger, and left there after the war, when it was practically impossible to move because there was no housing to be had elsewhere — again on the retired list."

A few weeks ago Henry Hale and I had luncheon together. At the time he told me he was selling his home in Waban and had bought a smaller home in Marblehead. What seemed to be troubling Henry was that the new house would not accommodate his concert grand piano for which he had great sentiment and he did not want to sell it. He wondered whether M.I.T. would accept it and I assured him that it certainly would. The piano was delivered to M.I.T. and it was such an exceptional instrument and in such fine condition that it was placed in the President's House. I am sure every '10 man sends his thanks to Henry for his thoughtfulness and generosity for M.I.T. Also, Joseph J. Snyder, 2-44, Treasurer of M.I.T., expressed the Institute's thanks in the following letter: "We were indeed delighted to have, as a gift to the Institute, your Chickering concert grand piano. The instrument is now in the President's House and I am sure it will be a source of great pleasure to Dr. and Mrs. Killian. This is indeed a real contribution to the facilities for music at

• 1911 •

Were it not for faithful Harry Tisdale, V, who seldom misses a month in sending me some news or a clipping regarding an '11 man, you might not be reading any 1911 class notes save for a couple of address changes. However, things will automatically reverse next month, for our annual "Seven Come '11" dinner at the new M.I.T. Faculty Club will have given us good news items.

Let's get back to the Tisdale Story. Harry writes: "Will no longer be going to Manhattan from Scarsdale, for on September 26 the metropolitan office of the American Dyewood Company was moved from 285 Madison Avenue, New York City, to 374 Main street, Belleville 9, N.J. We are in fine new offices there, where the factory of the New York Color and Chemical Company, our aniline subsidiary, is located. So instead of commuting via train to New York City, I drive to Belleville — about one and one-quarter miles from our 42 Homestead Avenue home in Scarsdale. Following a slow first-half year, our business has been picking up since June."

With the letter was enclosed a clipping from the Scarsdale *Reporter Dispatch* of October 1, covering a recent appearance by our own General George C. Kenney, I, before the American Legion Post there. According to the story, Russia has three atom bombs for every seven the United States has and, according to George, this deficiency may be holding the Big Bear back, for "Russia will move only when Russia is ready to move."

George told his audience that the NATO defense setup in Europe is far inferior to Russia's man power and air power, adding: "If the Russians start to move westward in Europe, it would take the Atlantic Ocean to stop them." He further pointed out that Russia has 200 divisions plus 100 satellite divisions, supported by 20,000 airplanes.

George, who now lives at 21 Wildwood Road in Scarsdale, devoted much of his talk to the topic: "What About Korea?" He deplored the fact that the UN air forces had not been allowed to bomb above the Yalu River at a time that 2,000 planes and large supplies of ammunition and gasoline could have been destroyed. According to George: "The ground forces could have chased the North Koreans right up to the northern border of Korea, but General MacArthur received orders from Washington to stop at the 38th parallel." Continuing, George termed the Inchon landing behind the enemy forces "a stroke of genius on the part of General MacArthur."

In tracing events that led up to the Korean conflict, George said MacArthur's intelligence chief, Major-General Willoughby, had done a remarkable job in determining with great accuracy the man power of the North Korean forces and locations of their supply and ammunition dumps. General Willoughby also reported that a surprise attack by the North Koreans could be expected at any time, the speaker said. George then emphasized the fact that this information was in the hands

of government officials at least a full year before June, 1950, when hostilities started. Shades of Kenney's former idol: General Billy Mitchell!

We were saddened in mid-October to learn of the death of Bob Dillon '10, well known to many '11ers and a vice-president and assistant to the president of the Boston Edison Company at the time of his sudden death. Bob was internationally recognized as an authority on electric power-plant construction and operation, having served at the World Power Congress at Paris in 1946 as a delegate.

Speaking of the Boston Edison Company, undoubtedly that company is the largest single employer of '11 classmates, with five: John Herlihy, II, a vice-president; Tom Haines, II, also a vice-president; Roger Loud, VI, district sales representative; Norman Wade, II, division head, and Henry Schreiber, XI, salesman.

Sara and I spent the Columbus Day week end up in Cornish, Maine, and the foliage en route and there in the foothills of the White Mountains was simply gorgeous. Our big son, Orville, Jr., '35, returned to service as a lieutenant, USNR, reporting October 1 to Miami for a refresher course, with assignment to be made at Norfolk on November 1. He was an air pilot in World War II.

From our daughter-in-law I learned that Charlie Hobson, X, and his wife are again grandparents, for their daughter, Sally, and her husband, Dr. Stanley Herrick of Portland, Maine, have just had a second boy — Charles Hobson Herrick, seven lbs. — Also a fine one-column cut of Albert Wilson's son, Albert O., Jr., M.I.T. '38, XV, with the subcaption: "A. O. Wilson, Jr., of Lexington, who has been elected to the board of trustees of the 145-year-old Andover Newton Theological Seminary, Newton Center." The younger Wilson is plant manager of his Dad's A. O. Wilson Structural Company in Cambridge.

Just a reminder, classmates, that we're planning an informal 1911 get-together at Snow Inn, Harwichport, Cape Cod, on the third week end in June and we hope to have a number of '11ers at this family party — an off-season get-together in advance of our big 45-year reunion there in June, 1956.

Have just had two new addresses from the Alumni Register: Charles A. Magoon, VII, who retired as senior bacteriologist, U.S. Dept. of Agriculture, Washington, D.C., in June, 1950, has moved from Riverdale, Md., to 533 West First Street, Mesa, Ariz., and Harold A. Smith, II, who was with John Urquhart, XI, at International Shoe Company in Manchester, N.H., is now at 769 N.E. 72nd Terrace, Miami 33, Fla.

So that it will be included on your income tax deductions for 1952, don't forget that subscription to the M.I.T. Alumni Fund, thus insuring continuation of 1911's fine showing each year in that important contribution to the Institute's advancement program. And so from Dennie and Jack: "Merry Christmas and a very Happy New Year!" — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

We seem to get more news from the clipping bureaus than we do in direct mail from the Class, as is evidenced by the following batch of notes.

The *Weekly Underwriter* of July 19, 1952, reported: "The many friends of Vincent L. Gallagher, long one of the outstanding executives in fire insurance industry, were pleased this week when it was announced he had been advanced to be United States Deputy Manager of the Pearl Assurance and vice president of the affiliated companies. A native of Dansville, New York, Mr. Gallagher was educated at St. Xavier College in Cincinnati, Armour Institute of Technology in Chicago and the Massachusetts Institute of Technology at Cambridge. He has been awarded the degrees of A.B. and S.B. Choosing insurance as a career, Mr. Gallagher entered the business as clerk and was later appointed special agent by the Aetna Insurance Company of Hartford. He afterwards was manager of the Business Development Department of that company. Joining the America Fore Group he served as secretary. Associating with the Pearl-American on October 1, 1935 he was appointed Western manager, a position he filled with distinction and was afterward assigned to the New York office as assistant United States manager, a position he filled so ably as to add to his already fine reputation. Mr. Gallagher has taken part in many industry activities and has made some notable talks before insurance gatherings."

The Lynn, Mass., *Item* of July 19 had the following news about Jim Cook: "James A. Cook has been named chairman and Herbert L. Ross has been selected vice-chairman of the advance gifts division of the 1953 Community Chest Campaign for Greater Lynn, according to an announcement made today by Harold E. Strang, general campaign chairman of this year's drive. Mr. Cook is president and general manager of the Lynn Gas and Electric Company. It is the second time in recent years that Mr. Cook will have headed up this important division of the annual Red Feather campaign. A former president of the Lynn Chamber of Commerce and a past president of the Rotary Club of Lynn, Mr. Cook is a welcome addition to the list of community leaders who will set the pace for this year's Chest campaign. Mr. Cook, who has three children and four grandchildren, is a graduate of the Massachusetts Institute of Technology and resides in Marblehead."

The *Berkshire Eagle* of Pittsfield, Mass., reported the following account of the promotion of Edward H. Mangan: "Edward Hopper Mangan, brother of Miss Lucy M. Mangan, principal of Pontoosuc Junior High School, has been appointed an executive vice-president of the Electro Metallurgical Company, New York, a division of the Union Carbide & Carbon Corporation. Mr. Mangan's experience with Union Carbide goes back to 1913, the year he graduated from the Massachusetts Institute of Technology. Mr. Mangan was born in Pittsfield. His father, Michael J. Mangan, was for many years superintendent of the foundry at E. D. Jones & Sons. He gets his middle name from his mother who

was Miss Rose Hopper. The new Union Carbide executive graduated from Pittsfield High School in 1908 and worked for a year in the General Electric before going with Electro Metallurgical in 1913 at Niagara Falls, and after two interim positions with other companies, rejoined Electromet in 1927 in the works engineering department. In 1930, he was transferred to the Alloy, W.Va., plant of the company and became assistant general superintendent in 1941. He became vice-president of Electromet in 1944. Mr. Mangan is also president of Carbide Power Company and vice-president and director of a number of Union Carbide metallurgical subsidiaries in Canada. Mr. Mangan's brother, Thomas, is an executive with the International Paper Company. Another brother, John, has been with the New Haven Railroad for many years. A son, William, has a position with one of the Union Carbide plants in West Virginia."

The Hamden *Chronicle* of Hamden, Conn., reports: "Kenneth Cartwright of 55 Brookside Drive was advanced from general mechanical superintendent to consulting engineer on the New Haven Railroad. Mr. Cartwright was born in West Epping, N.H. and is a graduate of M.I.T. in 1912. Beginning his service with the railroad as material inspector in 1914, he returned after service in World War I in the U. S. Navy, and in 1920 became assistant to engineer of tests. He advanced from general mechanical inspector in 1923 to assistant and later to full mechanical superintendent in 1951."

The following full account of David Dasso was taken from the New York *Times* of May 21, 1952: "David Dasso, Peruvian engineer who had served industrial concerns in this country and, for two years, during the second World War, was Minister of Finance and Commerce of Peru, died on Sunday night in Lima of a heart attack, it was learned here yesterday. His age was 61. During his term as minister, from April, 1940, to August, 1942, Senor Dasso was successful in obtaining a loan of \$25,000,000 from the Export-Import Bank here to assist in financing purchases in the United States of materials and equipment required in Peru for public works, and of agricultural, mining and industrial products. Visiting New York in April, 1942, in connection with the loan, the Peruvian Minister explained that part of the funds would be spent in providing guns, ammunition, and other equipment for the Peruvian Army, Navy and Air Force. The next month in Washington, he joined with Secretary of State Cordell Hull in signing a reciprocal trade agreement lessening commercial barriers between the United States and Peru. Shortly after taking his post in the finance ministry, Senor Dasso urged a group of the National Research Council visiting Peru, to study the possibilities of extending commerce between the South American republics by means of motor trucks and highways where railroads were lacking. A graduate of the University of Illinois and Massachusetts Institute of Technology, Senor Dasso was employed in the United States in the automobile industry. Later, after touring Europe, he became the representative in this country of the Swiss firm of Sulzer

Brothers, Ltd., manufacturers of machinery in Winterthur. In 1936, he was appointed vice president of the American Locomotive Company in New York and assigned to organize their Diesel motor section. He retained both these posts until named by President Prado y Ugarteche of Peru as finance minister. After resigning from the last-named position, Senor Dasso traveled in South America under the sponsorship of the Rockefeller interests, which included a survey of the potentialities of the Amazon Valley Region. Surviving are his widow, the former Olga Raffo of Lima; a son, Charles, who resides in Lima, and a daughter, Doris, who is visiting in the United States."

Erwin H. Schell's new book, *The Million Dollar Lecture*, was on display in his office at the special showing of the Sloan Building on Alumni Day. This book is the culmination of his long experience in charge of the Department of Business and Engineering Administration, his lectures, voluminous correspondence, and his intense interest in young men. It is a message which urges a philosophy of life as well as a philosophy of business administration. It deals with manner of living, character, spirit, leadership, and responsibility in relation to the individual's personal, civic, and vocational life. It has received very high praise since its appearance recently.

The *American Gas Association Monthly* for June, 1952, contains an article by G. M. Sprowls, of the Goodyear Tire and Rubber Company, entitled "Plan for More Tire Mileage." This relates to setting up a mileage-boosting program, particularly for managers of utilities with operations covering a considerable area. George has done a good job on a factual and helpful basis. George has also written as follows: "Last fall Rowland Wright '12, Course VI, stopped off in Akron to see me on his way back from the east to his home in Des Moines, Iowa. Rowland is vice-president and comptroller, I believe, of the Meredith Publishing Company in Des Moines. I told him that it was my intention to attend the reunion this year and I strongly urged him to attend also. I don't know just how successful I was, but I am going to write him again urging him to be sure and attend."

We were very glad indeed to receive word from Bernard Morash as follows: "One of the nicest letters I ever received reached me a week ago from Snow Inn. These greetings from many of those attending the reunion were very much appreciated by Laura, Carolyn, and myself. We certainly would have been there if it had not been for the illness you mentioned. You will be glad to know that Carolyn is doing very well and we sincerely hope that she will not have any kickback." — FREDERICK J. SHEPARD, JR., Secretary, 21 Chestnut Street, Boston 8, Mass. Assistant Secretaries: LESTER M. WHITE, 4520 Lewiston Road, Niagara Falls, N.Y.; RAYMOND WILSON, 8 Ogden Avenue, Swarthmore, Pa.

• 1914 •

From time to time, attention has been called to patents that have been issued to '14 classmates. The vast majority of

them have been to those associated with the American Telephone and Telegraph Company and its subsidiaries. This is the first time, however, that your Secretary has noted a patent issued to a '14 man and at the same time another to his son. A recent issue of the patents that had just been granted showed Herman Affel, who is with the Bell Telephone Laboratories in New Jersey, as receiving a patent on a television converter system while his son, Herman, Jr., who is with Philco in Philadelphia, received one on an electromagnetic wave transmissive structure. The younger Affel was also an Institute graduate in 1941.

A recent copy of the Bell Laboratories *Record* contained the following item regarding Herman, Sr.: "A group of leading scientists and industrialists which visited Korea recently included H. A. Affel, Assistant Vice-President of the Laboratories. They spent about three weeks in the Far East Command after leaving Washington on July 2nd. Secretary of the Army Frank Pace, in announcing the mission, said that he felt that the effectiveness of the individual soldier can be greatly enhanced by further developments in electronics. The group gathered much valuable information on the problems involved in adapting electronics to the battlefield, so that American technical and industrial know-how may more effectively improve equipment for the Armed Forces."

Bob Townend took his summer vacation traveling out through the Rocky Mountain district. After going out by train, he went by automobile with a guide for about 1,200 miles, taking in the Capitol Reef National Monument, then along the Colorado River in the Monument Valley. The trip also included the Navajo Reservation, and Grand, Bryce, and Zion Canyons. Bob, who is quite a photography enthusiast, obtained numerous fine photographs.

Traveling in the opposite direction, Ralph Salisbury is in the Mediterranean area. A card from him to Bull Owen states that he is associated with the Corps of Engineers project in the Mediterranean Division and that he expects to be there for two years; however, the time is such that he expects to get back by June, 1954, for our 40th reunion. At the time of his writing, Ralph was at Casablanca in Morocco.

An interesting photographic card from a distant place was received from our friend, the former Admiral Tatsuo Furuichi, showing him at a meeting in Odawara with a group of college professors, some of whom were from M.I.T. They were part of the engineering education mission from the United States to Japan. The Admiral hardly looks older than your Secretary recalls him when he was associated with our Class during undergraduate days.

You may recall that the Class had an option on the Sheldon House at Pine Orchard, near New Haven, for our 40th reunion. It has just been necessary to confirm the final dates which are now June 18, 19, and 20, 1954. These dates come a little later than usual, but the rearrangement is due to the fact that there has been a change in the Alumni Day program as well as commencement activities in general at the Institute. Charlie Fiske reports

that already there is an indication of a good attendance for this reunion. Be sure to keep these dates in mind.—H. B. RICHMOND, *Secretary*, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass. ROSS H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

• 1915 •

As the Alumni Fund enters its 11th year, Max's letter comes as a forceful, yet pleasant reminder of the privilege we all enjoy to contribute to this now well-established fund, but it behooves 1915 to get back on its horse and lift our percentage contributions and quotas up to where they should be for the glory of this glorious Class. So send your checks in now and thereby help M.I.T., help 1915, and help Max.

Again, I give you letters from many widely scattered classmates that came in with class dues last spring. Phil Alger, 1758 Wendell Avenue, Schenectady 8, N.Y., writes: "Here is something for the class treasury. Do you realize we are already one-third of the way from our 35th to our 40th reunion? By that time, a lot more of us will be retired and there will be more philosophers, so perhaps more armchairs and less golf will be in order. Anyway, I am looking forward to our 40th." Mrs. Cynthia M. Blodgett (Charlie's wife) writes: "Charles is in Japan; left September 9 and arrived safe and sound. He had a serious operation last December, and was in the hospital a couple of times since, but he is feeling all right now. He will be away four to six months, but we hope we can see you or some of the classmates upon his return." Charlie's new address is 319 Marine Avenue, Brooklyn 9, N.Y.

Lloyd and Alice Chellman maintain our 1915 spirit of help everyone by being nice to all '15ers in Washington. You will remember how they looked after Pirate George Rooney during the war, and now they are being equally as nice to Virginia Thomas while she is there. On their recent visit to their families here, they spent some time with Barbara Thomas, which, from the repercussions we have heard, must have been very gay. With a son-in-law named Everett Fish, they have a clever grandson announcement of a young couple hooking a big fish out of the water, and it tells when caught, where, size, and the anglers. The baby's name is Lloyd Hamilton Fish, born April 8, 1952, at Lowell, Mass., thereby qualifying the Chellmans for the Old Folks Grandparents' Club. Alice, who does the writing for the family, wrote: "Well, the Chellmans are back in D.C. after a delightful vacation; it was such fun to be with Barbara again, and I do wish a lot of us '15ers could get together. Don't forget to let us know when any of you are coming down this way sometime. Enclosed is a notice of our grandson's arrival. Our son, Bud, designed the announcement, which is pretty cute."

Herb Swift may have migrated from the Middle West to adopt New England as a permanent residence in his retirement, thereby acquiring some of the well-known Yankee acumen, for when we sent

out the restamped penny postal cards for a Boston class dinner, Herb wrote: "Sure I'll be at the class dinner. I am keeping your post card; it may be valuable for stamp collectors. Why not bring in to the dinner your reply cards and auction them off in batches? You can get back your postage anyway, and maybe more." Sure enough, generous Herb outbid every one and kicked in \$5.00 to the class treasury for his card. When Clive Lacy returned from his European trip, he told me he had seen Ken Boynton in Paris, and had had a pleasant visit there. Ken is European vice-president of General Electric. It certainly sounds like a big job, which Ken can handle well.

Sam Eisenberg, 751 Boylston Street, Boston 16, Mass., writes: "When there was no report of the Class of 1915 in the last issue of *The Technology Review*, some of us became a little fearful that old Azel was no longer hitting on eight cylinders, but when we get requests for money as usual we know that you are still alive and kicking. You probably know that my son, Gene, M.I.T. '43, is in the construction business with offices on Huntington Avenue. My son, Herbert, M.I.T. '52, is getting his degree come June, and just what he intends to do, we are not yet certain. He may wind up temporarily with the State Department, since he has become quite an expert on foreign student affairs and on student matters throughout the country in general. You know, of course, that he has been to Europe and Brazil as the United States representative of the National Students Association. To get everything cleaned up at school and put in some intensive work, he is, at present, living at the Institute, Runkel Hall. It is quite lonesome without him, but he does get home week ends. Last, but not least, my daughter Helene, has been married quite a while, and I am toying with the idea of registering her son, Mickey, at the Institute. To sum it all up, like the rest of you characters, I am getting old and I now have me three grandsons. Everything is under control and we are marking time and waiting for the 40th reunion."

Evers Burtner, Associate Professor in the Department of Naval Architecture and Marine Engineering at M.I.T., wrote in July: "You deserve great credit for handling our class news and gatherings so faithfully. Last month, I received a kind invitation to attend the trials of our new liner, the *United States*, from a class brother, Harold Bent, production manager of the Newport News Shipbuilding and Dry Dock Company, and supervisor of the trials for the company. I chose the official trials which would not require absence from *Technology* before the close of the second term. As the papers and magazines have reported, these trials were a great success. The vessel demonstrated that she is a high-speed lady and should attain the blue ribbon Atlantic speed record with ease. She will be a popular vessel, as the decorative effects are, in general, simple and harmonious, and there was very little or no vibration. Mr. Gibbs, the naval architect, commented that many individuals and firms contributed in her design and construc-

tion. I do feel that she is a great tribute to these and to the ability of our American naval architects and marine engineers. In this connection, I was very pleased to meet so many former graduates on the trials. These included, aside from Harold Bent, John B. Woodward '13, President of the News; L. R. Sorenson '19, Ludwig C. Hoffmann '29 and E. P. Rowell '22, both of Marine Administration, Maurice Sellers '31, Ed Rowe '36, Don Holden '31, Norris Parks '34, Bill Coward '51, Ed Hewins '16, Sumner Besse '26, Al Gray '36, Gordon Donnan '36, Fred Kaiser '50; and Howard Brown '06 and Warner Lumbard '25, both of *Marine Engineering and Shipping Review*—also Robert Tate '32 of Matson Navigation Company." Evers is a good fellow to know in case you are trying to get on some of these new glamour ships, and even though cruises may be a little beyond many of us, we might get a chance to have Evers show us around these boats sometime.

Still in the Army, but back to reserve status, Jim Tobey, the Olde, very Olde Colonel, writes from Sunset Hill, Newtown, Conn.: "I trust that you are not ill nor in jail or anything, as I noted that our class notes did not appear for a couple of issues; probably not enough of the classmates were interested in sending you news. So here goes for a little for you. Having finished peregrinating, for a while at least, one of my first duties is to respond to your touching biennial appeal for lucre. During the past nine months or so, I have been from Maine to California, from Texas to Florida, and throughout the length of Mexico, having spent the entire month of February in that exotic country. We came home along the Gulf, with stops in Napoleonville, La., New Orleans, Biloxi, Mobile, Asheville, N.C., and Roanoke, Va. In Atlanta, Ga., we dined with the Ellis and Florence Tisdale at a place known as Peacock Alley. Tizzie is in charge of training for the U.S. Public Health Service and, understandably, very enthusiastic about his job. He ranks as a colonel, than which there is nothing more cogent. In California last October, incidentally, I ran into a distinguished, prosperous-appearing individual, and his spouse, on a sight-seeing bus in San Francisco. He kept gazing at me and finally approached with the query as to whether I might be the notorious Jim Tobey. It was Pete Masucci '15 of Sharp and Dohme in Philadelphia, whom I had not seen for lo these many years. We had a good time reminiscing in the wet fog that was drifting in from the bay that afternoon. Didn't see any classmates in Mexico, although I did encounter General George C. Marshall in Cuernavaca. He was more cordial than the last time I met him in England. We expect to stay put for a few months, but may shove off in May for a little jaunt into upper New England, possibly including Boston. Would be most delighted to see any classmates who are in this vicinity, and by all means the roving Macks, with grandchildren. I am expecting a fifth next July. With best personal regards to you and Henry Sheils and all the rest."

Funnyman Bur Swain, with his dues check, wrote: "I will now thank you for

the Kodachrome print and the 'Happy Days' card which came along with it. It is a beautiful job, but why does everybody look so good? I like it very much and am pleased that it is not dated. Having just got it makes the next big event so far away, and it can't come too fast for me. As for the family, by the last mail, they all, or both of them, were well and happy. The boss and I having nothing to do, do not have time to do it. Still employed in the city, but put in most time and interest on a side line that has immense possibilities, I think. So long until next reunion." From Akron, Herman Morse writes with a nostalgic touch of the very enjoyable evening Mrs. Morse and he and Norris and Mrs. Kimball and Parry spent with us out there: "Enclosed is class dues check, a little late, but around March one has to check and see if there will be anything left after taking care of Uncle Sam. The dollar has surely changed since we picked out our lunch in the Tech Union by looking down the prices until we came to 15 cents and then across to see what it was going to be. If you came to Akron or Detroit last summer, we must have missed you, but Mrs. Morse and I still remember a pleasant evening at the University Club with you and Mrs. Mack and Parry, Keller. As I remember it, we watched Mickey Harris pitch for Washington and beat Cleveland on the club TV. Hope our paths will cross in the not-too-distant future."

With a full-page story and pictures from the March 16, 1952, issue of the *Hartford Courant*, telling all about Health Commissioner Stanley H. Osborn doing a busy job, keeping the public well, Ted Brown writes from the office of the Automobile Insurance Company of Hartford, Conn.: "I sat down this evening and sent off checks to the Alumni Fund and to Henry Sheils, and so I will complete the cycle and drop you a line. I am still at the same old stand as state agent for the Automobile Insurance Company of Hartford. The family is pretty well scattered. Ted, Jr., is with the Sterling-Winthrop Drug Company (Research Division) outside of Albany. Rhod is in North Carolina as production manager for the Belding-Hemmingway Company and Janet is buyer for McCallom's Department Store in Northampton, Mass. Of much more interest to you and others in the Class is the enclosed article which was in a recent copy of the *Hartford Courant*. I see Stan fairly often, and I can assure you that he is doing a very fine job. Ted, Jr., tells me that Stan is considered as one of the very top men in the country in the public health field, and I do not mean socialized medicine. Azel, if you are ever in Hartford, give me a ring. I am almost always in my office on Friday. The rest of the week I am traveling around the state, but my secretary can usually get in touch with me."

Last February, Boots Malone wrote from Chester, Vt.: "I have spent the winter here. I didn't think I could survive, but I managed it with the aid of a jeep. I hope to get to Bluffton, S.C., next month, where I have a small place." Boots has been retired for some time, and for a while was in poor health. We all hope by now he

has completely recovered. Allen Abrams and I missed each other in New York last February, where he was attending the annual meeting of the Technical Association of the Pulp and Paper Industry (TAPPI) where Warren K. Lewis '05 spoke. Allen said there were several '15 men from the paper industry in attendance. Bear in mind that most of these letters were written in the early part of last winter, from which you will be better able to understand the references the fellows make. Ed Whiting wrote: "My son, Dick, is being married March 1 in Bridgeport to Emma Jeanne Worthen. That makes all four married. Have two granddaughters in the last two months. Gene Place finally got to California. He and Mrs. Place drove there. Herb Anderson is on a Caribbean cruise and is due back soon." (I think somewhere in our notes I reprinted a letter from Herb on this cruise.)

Ted Spear, from Rumford, Maine, wrote: "How are you? We're about the same. Our two girls are married, and we are grandparents a couple of times. Just to prove we're crazy, we sold our house here, and will build another, come summer. Still have the house at Kennebunk Port, which we use seven or eight months in the year." This sounds as though Ted enjoys life. From 2580 Independence Avenue, New York 63, N.Y., Speed Williams wrote: "The latest I have to report on myself is that I recently had my gall bladder removed and now I can drink much better than before!" At our reunions and dinners, I can never recall Charlie having any trouble before, so this added capacity and ability will be something to watch at future reunions! Frank Boynton must be a fellow sufferer in secretarial work, because he says: "Kindest regards and many cheers for your class work. I have some idea of what it means." Maybe Frank can give me some advice that will help with these class notes. Here is another well-wisher that lightens my load. Orton Camp writes: "You do a wonderful job reporting for the Class. Let me know if you ever get near Waterbury." Fran and I plan to make a tour of Connecticut to visit all these classmates and their wives who have so kindly invited us. It may have to be during my sabbatical year or the first item on my retirement agenda. Joe Livermore says his work load is heavy, but it keeps him out of mischief. It is kind of hard to imagine Joe ever doing anything that isn't good.

Pete Munn, one of the regular attendants at the Boston dinners and also the New York parties, writes: "My son is now a freshman at the University of Maine. Isn't it about time for another New York trip?" Sometime next spring, we will try to organize and energize the New York gang into a class party. Everybody who remembers Frank Murphy, his bald head, and his sonorous voice announcing the events at the reunions can well imagine Frank as the anchor man in a chorus of 40 male voices in the Quincy, Mass., chapter of the "Society for the Preservation of Barber Shop Quartette Singing." Now, here is a generous classmate who spends the taxpayers' money wisely. Loring Hayward, civil and landscape engineer in

Taunton, Mass., writes (with his check): "I have been drawn on the jury, so am sending my first day's pay!" Al Sampson, the orator and humorist, now the New England manager for the National Aniline Division of the Allied Chemical and Dye Corporation, 150 Causeway Street, Boston, Mass., writes: "My Thickest Friend: No thanks at all for reminding me that the dastardly specter DUES-ARE-DUE has again reared its ugly head in our midst. Gladly, my check is enclosed. As a friend, may I suggest time be of the essence in its cashing, due to near term obligation to Mink, Inc., and Massachusetts taxes. [I hope Al refers to Washington Mink and not Mrs. Sampson's.] At your convenience, please convey my compliments to your class dues associate, Mr. H. Catalyst Sheils."

We can always rely on Jerry Coldwell for a witty and newsy letter. This one is no exception. The lunch I had with Jerry, when he did get to Boston, was a delightful visit. He writes: "What I would like to know is why I never hear from you on your trips through New York. You must make them, as you seem to get to all other parts of the country. The lunch invitation is still out, so how about making use of it? I am enclosing a check that should keep you off my back for a few months anyway. As a matter of fact, I think you go a long way on the amount that you do collect — could it be that you are of a frugal nature? I doubt it! No particular news for you; things seem to run along about as usual, business problems, tax problems, and so on; but all of the others have the same sort of thing, so that isn't news. I was out on the West Coast a couple of months ago and saw Jim Holmes, Class of 1914, I guess. He has a business of his own and is doing considerable work for the Atomic Energy Commission. I make the trip out there three or four times a year to check jobs that we may have running and to see if there are any new ones lying around, or any which could be dredged up. Haven't been out of the country, except Canada, since the summer of 1950, a large part of which I spent in Iran, and some in Paris. The latter was by far the better, as you may guess. Mrs. Coldwell and I are going to Florida for a couple of weeks or so, and will base at the Naples Beach Hotel, in Naples, Fla. We are driving down, the advantage of that method being that for several days going and returning you are not within reach of the telephone. I may be in Boston in March, and if so, I'll try to give you a ring, and perhaps we can have lunch together up there."

Wouldn't you think that after all those strenuous years in Japan Harvey Daniels would stick to retirement and enjoy his old age? Instead, he writes: "Greetings! Since retirement and return to the United States about two years ago, my wife and I have settled in Washington, D.C. For the past one and one-half years, I have been employed by the Economic Cooperation Administration (now Mutual Security Agency). This is purely a temporary situation, for I fully intend to work at retirement beginning soon. Both sons live in Minneapolis, the older one married with two children, and the younger, who

is with Minneapolis-Honeywell, will marry Arnetta Leslie of Minneapolis on March 1. Kindest regards to you and other old classmate friends."

A sad note closes our column, with the announcement of the passing of Frederick A. W. Davis, who died on September 10, 1952, in Knoxville, Tenn. Fred was a popular and active undergraduate classmate, and it is a loss to the Class to have him gone. We send our sympathy to his widow and family. More of these entertaining and interesting letters next month. After that, "help." — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

With the report of the 36th reunion now behind us, we will now bring you up to date with some of the other news items that have been piling up here. Some of them may be old, but we hope that you still find them interesting.

"I was glad to have a telephone call from Patten, 1916, IX, and am sorry that he did not drop in." This short note from Dick Steese prompts us to devote a few lines of this column to the pleasant experience of seeing or talking to another classmate. In this particular instance, we recall that Dave Patten made a trip throughout the whole United States a short while back, and we are assuming that when he was in La Jolla, Calif., or nearby, he called Dick up. We have all enjoyed occasions like this and most of us wish that it would happen more often. Many of us are now finding the time to travel, and no matter where we go there almost always is at least one of our classmates in the areas through which we pass. How nice it would be for both parties if the one passing through would take a minute to call the one residing in the area and exchange good wishes.

Many of you will recall that at the 35th reunion we handed out up-to-date class lists. Since that time, we have tried to keep you posted on changes in address. We hope that you have kept your lists up to date. These lists could be carried in your traveling bag for reference throughout your trips. We feel that this is an excellent way to continue and perhaps further the warmth and friendly spirit that presently exists among the members of our Class. We will be glad to send a class list to anyone who does not have one and who will write us requesting one. When writing, be sure to include news items for our column — latest activities, family items, contacts with classmates, travels, and so on. The following changes of address were recently received: Dexter North, 5103 Brookside Drive, Washington 16, D.C.; Edwin A. Ekdahl, Ebasco Services, Inc., 2 Rector Street, New York 6, N.Y.; Harmon E. Keyes, 508 East Culver Street, Phoenix, Ariz.; Professor Murray P. Horwood, T. C. A. Educational Project, U.S. Embassy, State Department Mail Room, Rangoon, Burma; Paul P. Austin, 1000 Lombard Street, San Francisco, Calif.; Colonel Charles H. Woolley, U.S.A.F.E. Paris Office, A.P.O. 58, in care of Postmaster, New York, N. Y.

Sickness or injury has plagued the foot-

steps of some of the members of our Class and we wish to send our best wishes and hope for good health to: Freeman Hatch who recently was laid up with torn leg muscles; Walter Aiken whose wife has been suffering from heart trouble; Donald Webster who couldn't make the 36th reunion because of a slight illness; Harvey Stocking whose wife has been suffering from a rheumatic heart; Dutch Gaus, who didn't specify the ailment which necessitated his hospitalization but who did say, "In case anyone should ask, I'm not in the maternity ward"; and to Eddie Ekdahl who recently underwent a leg operation. Walter Littlefield visited Eddie shortly after his operation and reported that he was doing fine.

Here are a few shorties on classmates. Wes Blank recently made a great stride toward the title of "Grandfather of the Class" when his son, Wesley, Jr., and his daughter-in-law, Betty Jane Rodger, became the proud parents of twins, a son and a daughter. Ed Barry recently was the speaker at the meeting of the Plant Engineers Club at M.I.T. and spoke on the subject, "Trends in the Design of Industrial Steam Plants." On July 5, Dexter North married Corinne Frances North, daughter of the late Mr. and Mrs. Charles Wesley North of Guilford, N.Y. A recent card from Art Shuey tells us: "I see Ralph Bennett and Vertrees Young quite often. They are so young they make me feel old."

Joey Connolly mentioned in one of his recent letters that he met Ed Hale at a good alumni meeting in Chicago. Your Secretary recently had the pleasure of a few days in England and Scotland. Your Assistant Secretary has been kept busy making trips to the Ordnance Ammunition Center in Joliet, Ill., on a job of quality control of ammunition. Dick Berger recently made his debut on television. He writes: "Because of my resemblance to President Harry S. Truman, I opened the first of the new series of Jackie Gleason television shows, C.B.S., Channel 2, Saturday night, Sept. 20, at 8:00 P.M. Maybe you saw me — for 28 seconds." Steve Berke made his debut in *Life* in the October 20 issue of that magazine, page 47. There was a picture story of the interest in the recent World Series, and included was a group picture taken at M.I.T., with the caption: "Playing hokey from their cyclotrons and calculus, M.I.T. professors in Cambridge ogle TV as Yankees come through in 7th game." Steve appeared in this picture. How are your cyclotrons, Steve? Hal Neilson must have had an interesting and exciting summer. He wrote as follows, just before taking off on his trip: "I am trying to work up an itinerary for an early departure to Alaska and will, if I go, spend the rest of the summer driving and seeing that part of British Columbia I have missed on two previous trips, getting back to take a pack trip in the wilderness area of the Cascade Mountains in north Washington in August."

Earl Townsend sent us this interesting letter last summer: "I had hoped to get to the 36th reunion, but find that my trip to Canada will carry over until the 12th of June so will be unable to attend except

in spirit. I am still with the Factory Mutual Engineering Division and employed by our classmates Hovey Freeman and Ed Williams. This year I have been following the sun, as the pro golfers put it. During the winter, I was in Puerto Rico for four weeks, and then in Florida for two weeks. Right now I am far up the Saguenay River in Quebec for a four-week stay and expect to return in July for a like period. My family and myself are in good health, and the score to date is four children and four grandchildren."

Here is another letter we received as a result of our reunion mailings. This one is from Frank Richardson's wife: "Frank regrets very much that he cannot be with the 1916 class reunion this year. You may recall he was sent to London in 1944 as a U.S. delegate to discuss with the British and Canadians standardization on the 60-degree thread as a common screw thread standard for the three countries. In 1945, he was sent to Ottawa on a continuation of the London discussions which finally terminated in Washington by the signing of the 'Accord.' Now, he is serving as a Department of Defense representative in the current American-British-Canadian Conference on other screw threads and products. He may be held over in New York for the International Standardization Conference, so you can readily see things have piled up, preventing him from being with you this year. He hopes everyone has a wonderful time."

Here's a nice note from Bud Storm: "Unfortunately, I returned from Europe too late to do anything about our 36th reunion. I certainly wish I could have been there, but I will look forward to the 37th. I am sure that you get to New York occasionally, and I hope that on your next trip you will save a luncheon or dinner with me. Also please tell any of the lads that you may see that I would like very much to have them drop in — at least for a drink." That's a very kind invitation, Bud. For those who may have trips to New York coming up in the near future, Bud's address is 50 East 42nd Street, New York City.

"The Christophers" is an organization guided by Father James Keller and with many thousands of ordinary people like ourselves as its followers with its purpose being that of minimizing the effectiveness of the Communists in this country by encouraging, and perhaps even inspiring, the ordinary people of this country to do good works in their every day walk-of-life, based on the belief that in the long run good will overcome evil. We are very pleased to quote the following letter that Dick Berger received from Father Keller: "Just wanted to get this little note off to you to thank you for your thoughtfulness in sending along that issue of *Life Today* containing your article, 'Cancer Prevention.' We are glad to see one more example of the fine work that you are doing. God love you, Mr. Berger, and here's wishing you every blessing!"

Although the national election will have come and gone by the time you read this column, we would like to give you this report from Steve Brophy on the non-partisan register and vote campaign of the American Heritage Foundation, of which

he is president. He enclosed a copy of the program which contains some very interesting facts. The score on voting in this country is as follows: 1900, 73 per cent voted; 1920, 49 per cent; 1940, 53 per cent; 1950, 44 per cent. This compares with recent figures of 75 per cent for Canada, 80 per cent for Sweden, and 83 per cent for England. A national "Get Out the Vote" campaign was initiated by the American Heritage Foundation in 1950 when the record-breaking total of 42,324,232 voters went to the polls. This was an increase of 5,000,000 over the previous record (1938) for a nonpresidential election. The foundation does not suggest that its efforts alone produced this result, but it has reason to believe that it helped significantly. An unusual effort was made in Syracuse to get out the vote in the 1950 election; a survey showed an encouraging increase in the intelligent vote. For example, the percentage that failed to vote in 1949 and 1950 was as follows for the following groups: doctors, 28 per cent in 1949 and 15 per cent in 1950; bankers, 28 per cent in 1949 and 14 per cent in 1950; automobile dealers, 44 per cent in 1949 and 20 per cent in 1950; Kiwanis Club, 40 per cent in 1949 and 13 per cent in 1950; dentists, 32 per cent in 1949 and 9 per cent in 1950. Sorry, no figures are given for engineers. The significant factor is that a well-directed local effort changed the voting habits of some 13 groups from one out of three failures to only one out of eight failing to vote.

The Foundation's 1952 campaign is directed at the community level with the following over-all objectives: To develop a greater awareness and a keener appreciation of the advantages we have in this country, emphasizing the relationship of our hard-won civil liberties to our development as the greatest nation of free people in the world's history; and to persuade all Americans that only by active personal participation in the affairs of our nation can we safeguard our freedoms, preserve the liberties from which all these advantages flow, and continue to demonstrate to the world and ourselves that the way of free men is best. Again, although the election will be history at the time that you read this column, there will be other elections, from the national all the way down to the town, and when Steve says: "There is nothing more important in my opinion this year, than getting out the intelligent vote, and, as you will observe in the program memorandum, so-called better citizens have fallen down pretty badly in this respect in past elections. Urge the boys to take a leadership part in their communities next fall in this effort to persuade all good citizens to register, know the issues, and vote on November 4"—he is pointing out to us the only true road to the democracy that was envisioned by the founders of this nation, and it is the road that we should walk steadfastly and diligently, not only today but all the remaining years of our life.

In conjunction with this report from Steve, we read in the September 10 issue of *Pathfinder*, a national magazine, of another phase of the program sponsored by the American Heritage Foundation, in which 3,000,000 Boy Scouts were to visit

28,000,000 homes on the Saturday before election day with the message inscribed on a Liberty Bell cutout for the doorknob urging: "Vote as you think . . . think when you vote."

We would also like to mention the arrival of Steve's first grandson, Thomas D'Arcy Cleveland, on June 24—weight eight pounds, nine ounces, the son of his daughter Cynthia and John L. Cleveland, Jr.

Here's Al Lieber's latest letter: "This past year has found me busy, as seems customary in the Army, and a bad correspondent, for which I have only myself to blame. My principal duty still is to turn out qualified combat engineer soldiers, specialists, and N.C.O. leaders for the overseas units at the rate of about 15,000 per year. It is interesting work, and keeps me young in mind, and reasonably spry in body. The young men we get by way of volunteers and Selective Service are generally a fine group, interested in learning the military art and field engineering. They have been giving a fine account of themselves in Korea. My biggest gripe is still the fact that so many of us, as citizens, seem to figure that we do our part by paying taxes, and have no personal concern in our government or its defense. So many people want warfare to be done at a distance by machinery—one long-range bang and the enemy should quit, except that he doesn't, nor would we. That's where the soldier comes in, and that's why I'm still in the Army instead of leading the pleasant life of a farmer over at our place on the Chester River on the eastern shore. Happily the farm does well by remote control—that is, part of the time. My wife, who had been in rather poor health for the past couple of years, now seems quite recovered and full of plans to keep me busy. Our two children are that no longer. My son is completing his second year at West Point with an eye on the Infantry, and my daughter graduated from junior college this year, aiming to transfer to William and Mary. It is such fun to watch youngsters grow up, though it is lonesome at home without them. This is probably a good way of breaking quietly into retirement." A very nice letter, Al, and we are all very happy to hear that your wife is back to good health again.

Your Secretary's secretary had the pleasure of meeting and chatting for a few minutes with George Crowell and his lovely wife at the Hotel Statler in Boston recently. George asked to be remembered to his classmates. Tom Berrigan writes: "Nothing unusual has happened in my life since I last wrote to you, so I'm not able to furnish a personal note. The only classmate I ran into lately was Walt Binger, whom I saw in Chicago. As you know, Walt was very friendly with Bill Farthing and we talked a lot about Bill." Gene Barney writes from Wayne, Mich.: "I have nothing of particular interest to report except that I am now plant manager of the Wayne Plant, the Detroit Diesel Engine Division of the General Motors Corporation, where we are building auxiliary engine generator sets for the new tanks. There seems to be very few members of the Class of 1916 in the De-

troit area because I seldom ever run into a member of the Class when attending M.I.T. meetings of the Detroit alumni group."

We would like to close this column by expressing our sincere thanks to Izzy Richmond for his kind invitation to those who were at the reunion last June and who were going to Boston from the Cape, to drop in at his house in a group for cocktails. You can be sure, Izzy, that we were very happy to get your message while at Coonamessett, although it turned out that we could not take advantage of your invitation.

That's it for this month. May we again have the good fortune of a full mailbox when next month rolls around. —RALPH A. FLETCHER, *Secretary*, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Laboratories, 463 West Street, New York, N. Y.

• 1917 •

Since 1952 is a year of great political activity, Neal Tourtellotte brings us up to date on the latest exploits of his wife, Janet: "I have received several notes from M.I.T. men asking if it was my wife's name, i.e. Mrs. Neal E. Tourtellotte, that was heard over television and radio at the conclusion of the Republican National Convention as the Republican National Committeewoman for the State of Washington. It was! They also heard the name of Francis V. du Pont as the National Committeeman from the State of Delaware. The latter was our Dutch du Pont.

"This National Committee is the Executive Committee of the Republican Party. My wife and Dutch are both serving their second four-year terms. Since I have 'only one wife to give to my country' I shine by reflected glory. However, I must frankly admit it was somewhat of a thrill to know that your name was being heard throughout the entire United States. These National Committee members are the representatives of the 48 states, one man and one woman from each state. No pay.

"My wife, Janet, was 'part and parcel' of the State of Washington delegation that stole so much of the spotlight of the convention. Langlie, with his motion that tied 'em in knots, and then Don Eastvold who led the Credential Committee Minority Report—and won. All from Washington. (I sound like a California booster.) Janet no more than got home than they descended on her and she is running for the U.S. Congress as a delegate-at-large. If she gets the nomination and then is elected, we plan to be plane commuters."

However, Neal and Janet do not rest on their laurels. Their Janalu Farm recently won the award for the best grassland farm of 1952 in King County as announced by the Seattle Chamber of Commerce agricultural committee. The goal of the contest is to encourage efficient production of grass and general improvement of grassland farming. The news item commented: "The Tourtellottes bought the poor, sandy soil 'stump ranch' in 1941. . . . Practically none of the acreage was cleared and it was denuded of all trees. Now the contrast is startling with the ever

green fields, winter or summer, with the magnificent tree-lined interior avenues and field borders."

Answering the call on his latest activities, I have received the following from John DeBell: "There is not much to tell except that I passed a couple of pleasant evenings with Ras Senter in Dallas and made powerful comparisons of the oil and plastics industries. The struggle was a draw, but large quantities of plasticizer were consumed. Ras was in his usual fine fettle and had quite good reasons for transferring headquarters of 1917 to Texas, a rapidly growing state of huge horizons and great energy, suhl!

"Our semi-plant work at Hazardville resulted from demands on our clients to carry various developments through this stage until they were self-supporting. Since these involved substantial material handling and were rather unwieldy for laboratory accounting, we set them up in a separate corporation, which also gave us an opportunity to allow some of our senior men to participate in a venture."

Phil Cristal's daughter Joan was married in the Melvin Village, N.H., Community Church on Saturday afternoon, July 26, with a reception at the Wellsweep in Wolfeboro. Phil Hulburd writes: "There was quite a 1917 contingent (Phil and Betty Hulburd, Gus and Julie Farnsworth, Dad and Mrs. Wenzell, Ken and Mrs. Bell) which was duly recorded for the record on photographic film, both by Ken and by the official photographer. Phil seemed pleased that we all showed up—but was no doubt relieved that the projected oxcart arrival about which we talked at reunion did not materialize." Phil's son was at Exeter for the summer but "leaves at the end of the month [August] for a year in Germany after which he will be at Andover. Helen and the two little girls will join him at Christmas time in Switzerland and will perhaps stay on to return in the late spring after Bob's work at Munich is done."

Ray Maeder was recently appointed special agent of the Northwestern Mutual Life Insurance Company in Boston. Howard R. Stewart, formerly Vice-president of Economic Machinery Company in Worcester, Mass., has joined the headquarters sales group of Standard-Knapp Division of the Emhart Manufacturing Company, Portland, Conn.

Congratulations are due Dick Lyons who was elected president of the Union Sulphur and Oil Corporation, Houston, Texas, on November 1. Tom Meloy has been appointed director of research for the Westinghouse Air Brake Company organization. Tom is president of Melpar, Inc., a subsidiary of the company. Plans call for establishing a research center in Alexandria, Va., to serve all divisions of the company and the facilities and personnel of Melpar will be utilized by Westinghouse.

Tom Ryan was unable to attend the reunion last June because of "the extensive addition to our facilities [Basic Refractories, Incorporated] at our Ohio plant, the completion of which made it necessary for me to forego the trip to Portsmouth." However, Tom says, "you may be sure that I will start making plans now for the

40th reunion."—And so will we all!

A special reunion issue covering activities at Portsmouth last June has been prepared and is being sent to all members of the Class of '17—RAYMOND STEVENS, Secretary, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, Assistant Secretary, 24 Federal Street, Boston 10, Mass.

• 1919 •

Leo E. Beaulieu spent the summer, with his wife and two children, touring this country from east to west and also Canada by auto. He also writes: "I have sold out part of my business interests and I intend henceforth to slow down, before it is too late. I recommend this course to all remaining classmates."

A recent card from Jacob Braverman states that he is still manufacturing corrugated shipping containers, partly for war effort. His son, Richard, is in Army Engineers at Fort Eustis, Virginia, and his daughter, Nancy, attends Bates College up in Maine. Congratulations to Jacob M. Carter on his first grandchild—Joseph Hode Fenton. The proud parents are Joseph H. Fenton and Nell Carter Fenton of Wichita Falls, Texas. L. W. Cartland dropped a line recently from overseas and said that he is still working in textiles in Korea. He has been transferred from ECA to United Nations Korean Reconstruction Agency.

We all join in wishing our classmate Bernard S. Coleman the best of success in his new endeavor—the purchase of the Chase Sanatorium in Los Angeles. He writes: "What with my other institution, the Paradise Sanatorium and Hospital, I shall be kept quite busy. Appointed chairman of one of the budget committees of the Community Chest."

We extend our sincere sympathy to the family of our classmate Robert P. Hackett who passed away October 1. A recent note from Bill Banks states that Bob Hackett had been at his house in August and seemed fine. His passing was quite a shock both to Bill and our other classmates. Bill also writes that George W. McCreery was in Cape Cod Hospital for a week or two following a collapse but is better now. His final advice to us all is, "We better start to slow down."

We extend our good wishes to Harold G. Pratt on the continued success of the Allen-Pratt Agency of the John Hancock Mutual Life at 225 Broadway, New York, which agency was started under the present setup a year ago. We are certain the huge success of the business is no doubt due to the untiring efforts of our classmate.

Congratulations to Leighton B. Smith who has been made professor and chairman of the Department of Chemical Engineering at Tufts College. He was formerly assistant director of research and development at the Lever Brothers Company's former Cambridge, Mass., plant. We also extend heartiest congratulations to Barbara and Donald Way, the proud parents of Curtis Graham Way—born October 3.—EUGENE R. SMOLEY, Secretary, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

• 1920 •

Judging from the meager amount of grist for this mill, it looks as if I had made a mistake to shoot the works last month instead of spreading it over the year. If I did that, however, some of it would be pretty stale news. All I can say is that if you do not see any news of classmates some month, it will probably be because no news was forthcoming and not because your Secretary was asleep on the job. The fact that we did accumulate quite a volume over the summer period indicates to me that there is news if only you will cooperate in sending it to me. You want to hear about your classmates and what they are doing; they want to hear about you. It's a 50-50 proposition. All I can do is act as intermediary. Will you do your part?

At this writing we are just about at the halfway mark between class reunions. Those of us who were fortunate enough to attend the 30th will already be looking forward to the 35th. As time goes on, such gatherings seem to hold increasing importance and enjoyment. Don't you agree?

Bill Schimmelpennig is now in Puerto Rico (address: San Jose Apartment No. 2, Calle Taft No. 8, Santura, Puerto Rico). Benjamin West has left Tampa, Fla., and is at Monmouth Beach, N.J. Two of our admirals have new addresses: Ned Cochran, the new Dean of Engineering at M.I.T., is at 2 Larchwood Drive, Cambridge. Claude Kell is at Point Pleasant, Va. (address: 1915 Jefferson Boulevard).

Irwin L. Moore, President of the New England Electric System, is considered one of the country's leading utility executives. His company supplies service to more than 2,500,000 people in 250 New England cities and towns. Irwin had a good background for this responsibility. He was a chemist in the Bureau of Standards in Washington, an instructor of Electrical Engineering at M.I.T., an engineer for the Aluminum Company of America, and assistant to the president of the International Paper Company before taking his present important position as head of an organization that does a hundred-million-dollar business.—HAROLD BUGBEE, Secretary, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

As the Alumni Fund swings into its 12th year of breaking one record after another, you have received an analysis of what has gone on before, along with a heartening note of appreciation from President Jim Killian '26. Our own Ed Farrand, neophyte fund-raiser and gentleman farmer of Georgia, deserves a special word of praise for the standing of the Class of 1921 among the 57 individual classes from 1896 through 1951 shown in the report. We are ninth in total amount contributed since the Fund started in 1940. For the last year alone, we gave the eighth largest amount, or the sixth largest if, for the comparison, the extra big gifts of the 25- and 50-year classes are excluded. We had the seventh largest number of contributors last year, although we are 25th in size of active class roll. We were 16th in the percentage of those contributing, tying the figure of six other classes and ex-

ceeding both the M.I.T. average and national averages for similar funds. In size of average contribution, we were 27th, or below both the M.I.T. and national averages. You can say "thank you" to Ed by thoughtful giving "in proportion" this time.

Irving D. Jakobson, President, Jakobson Shipyard, Inc., Oyster Bay, N.Y., and reunion chairman par excellence, has written an interesting account of his recent doings, which says, in part: "I received an invitation from Horace W. McCurdy '22, who lives in Seattle, Wash., and is president of the Puget Sound Bridge and Dredging Company, to accompany him last summer on a cruise through British Columbian waters. Mac and I rowed on the crew together when we were at M.I.T. and have kept up our friendship ever since. I joined Mac on his yacht *Blue Peter* at Pender Harbor, B.C., and spent two weeks of the most delightful cruising that I have ever done. We went through many narrow passages and deep fiords, all surrounded by snow-capped mountains and tremendous growths of fir trees. The grandeur and beauty of the scenery is beyond description. Many of the places where we anchored for the night were remote from all civilization and the only sounds were from our own voices and animal life on shore. Following the cruise, we witnessed the Gold Cup races in Washington and, as a grand finale, Mac and his wife took me up to Mount Rainier. The Pacific Northwest is wonderful country and it impressed me as having still further opportunities for growth and development."

Samuel T. Drew reports a new home address at 1818 South Bayshore Lane, Miami 45, Fla. Zambry P. Giddens has left the New York area and is now associated with the Palmer Stendel Oil Corporation, 1027 Kirby Building, Dallas, Texas. William L. Knoepke, formerly of Short Hills, N.J., has a new home at 8 Briar Close, Larchmont, N.Y. Richmond H. Skinner, owner of the Interstate Airways of Alton Bay, N.H., and the Ernest M. Skinner and Son Organ Company of Reading, Mass., now has the rank of lieutenant colonel. A World War II lieutenant colonel who returned to civilian life with the reserve rank of major, Dick holds the Legion of Merit decoration awarded by the Navy. New addresses have also been received for Colonel Leland H. Hewitt and Marshall E. Pridmore. John J. Winn is comptroller of the river port and airport, Portland, Ore. Leon A. Lloyd is power sales supervisor of the Narragansett Electric Company and a director of the Mystic Power Company, with headquarters in Westerly, R.I. He is also a director of the Tri State Finance Company. Besides membership in the Providence Engineering Society, Al finds time for numerous community activities and is a past president of the local Red Cross chapter, the Lions Club, and the Westerly Chamber of Commerce. He is currently vice-president of the Y.M.C.A. and is working with the Community Chest, the Boy Scouts, and Girl Scouts. Al and Mrs. Lloyd have three children: Edith, a junior at Simmons; Barbara, a senior in high school; David, in grade school. Al reports seeing Vic Hassold of Philadelphia, who was pre-

vented by illness from attending our 30th reunion.

Winfred L. Foss, former assistant industrial director of the New Hampshire State Planning and Development Commission, has been made director of the industrial division. A native of Washington, D.C., he resides in Campton, N.H. He prepared for Technology at Phillips Andover and later studied at Columbia. He was associated with the Pierce Arrow Motor Car Company, Buffalo, N.Y., as comptroller and later became managing director and treasurer of American Machines and Metals, Canada, Limited. He joined the New Hampshire commission two years ago. Alfred B. Quinton, Jr., major general and former special assistant to the chief of ordnance in charge of mobilization production, has retired after 40 years of military service. A native of Topeka, Kansas, he was formerly commanding general of Aberdeen Proving Ground, Md. During World War I, he was chief of the trench warfare section of the staff of the chief of ordnance, American Expeditionary Forces in France. In World War II, he was chief of the Detroit Ordnance District and after the war he served as assistant director of industrial programs for the Munitions Board. He was graduated from Cornell, received his master's degree with us in Course II, and later attended the Harvard Business School. General Quinton holds the Distinguished Service Medal, the Legion of Merit, Purple Heart, Army Commendation Ribbon, the Étoile Noire of the French Legion of Honor, and the degree of honorary commander of the Order of the British Empire. He and Mrs. Quinton make their home in Washington, D.C.

Herbert W. Reinhard spoke on "Soil Conditioning" to the Rotary Club of Newton, Mass. Owner of the Protective Coating Company, Newtonville, Herb manufactures plastic paints and special vinyl coatings to prevent corrosion of metals. Never a month passes that John W. Barriger, 3d, President, Chicago, Indianapolis and Louisville Railway Company, is not featured in the news many times. Jack played a part in the Centennial of Engineering observance in Chicago with a stirring address on "Engineering the American Heritage" to the American Institute of Consulting Engineers. The September 29 issue of *Railway Age* has an illustrated article entitled "The Monon 'Barnstorms' for Good Will and Traffic," showing Jack's "Hoosier Hospitality Special" performing its "Town Meeting of the Rails" in every community on the Monon Line, where the train's special facilities afford a three-day schedule of meals, sound color movies and a down-to-earth informal meeting of the Hoosier road's top officials with large groups of local residents. Reminiscent of our 30th reunion, Jack starts the sessions wearing his Monon engineer's cap. He is credited with inaugurating a new form of public and community relations that is truly establishing the aggressive and progressive railroad as the "life line of Indiana."

On behalf of the Class, sincere sympathy is extended to the families of three of our members whose deaths have been reported. James Cutler Vickery, who was a candidate for a master's degree in Course

X during our senior year, died on August 4 at his summer home in Dennis, Mass. Born in Evansville, Ind., he made his home in Scarsdale, N.Y. At the Institute, he was a student Army officer from the Watertown Arsenal, pursuing graduate work in explosives. He had received bachelor's and master's degrees from Princeton in 1916 and 1917, where he was a member of Dial Lodge and Phi Beta Kappa. He attended the Ordnance School of Application, Aberdeen Proving Ground, in 1920. In 1922, as a captain of Coast Artillery Ordnance, Regular Army, he served on the staff of the Picatinny Arsenal in the manufacture of explosives. He entered civilian life in the textile manufacturing field, becoming a regional manager and then promotion manager of the Holeproof Hosiery Company. In World War II, he was a major of ordnance and, successively, commanding officer of the Vigo Ordnance Plant in Terre Haute, Ind., the Coosa River Ordnance Plant in Talladega, Ala., and the Buckeye Ordnance Works, retiring in the fall of 1945 after more than three years of service. He was a member of the Dennis Yacht Club, the Scarsdale Golf Club, and the Scarsdale American Legion Post 52. He is survived by his wife, Jeanie Sonntag; two daughters, Marcia, who is an editor of *Glamour* magazine, and Anne, who is a laboratory assistant at the Payne Whitney Clinic of Cornell Medical Center; and a son, James C., Jr., a Princeton sophomore in the Navy training program.

Kenneth Newcombe Goward of Lowell, Mass., master of the Oakland School and a well-known educator, died on September 9 in Lowell. Born August 28, 1896, and educated in Lowell, he prepared for Technology at the Lowell High School. He received his bachelor's degree with us in Course XV and was then appointed to the Lowell High School faculty, where he taught science. He studied education at Boston University and Harvard, where he received the master's degree in 1946. He became master of the Oakland School in 1948. He was a member of the Elementary School Principals Association of Massachusetts, the Massachusetts Teachers Federation, the Lowell Teachers Organization, the Lowell Principals Club, and president of the Peoples Club, a scholarship group. He is survived by his wife, Virginia Lord; a daughter, Joanne; two sons, Jonathan and Samuel; two sisters, Mrs. Phyllis Tewksbury and Mrs. James Martin; and a brother, Paul.

Maurice Mason of Needham, Mass., died on August 15. No details are available as these notes are being prepared. Walt was born in Holyoke, Mass., July 18, 1898, and prepared for the Institute at Holyoke High School. A member of the Chemical Society, he received the bachelor's degree with us in Course X. He was a member of the staff of the Dewey and Almy Chemical Company, North Cambridge, Mass.

In closing this calendar year, Class President Ray St. Laurent, Class Agent Ed Farrand, Alumni Council Representative Chick Kurth, Gift Chairman Warrie Norton, and the many others who serve in various capacities, join your Class Secretary in wishing you and yours a very Merry

Christmas and a most prosperous and happy New Year. — CAROLE A. CLARKE, Secretary, International Standard Trading Corporation, 22 Thames Street, New York 6, N.Y.

• 1923 •

There are still a number of interesting notes about members of the Class which came in during the summer but which could not be covered in the November notes for lack of space.

During the past year Brigadier General Roland P. Shugg retired from the Army and on his retirement located at Pocasset, Mass. He attracted notice in June through a series of interviews published in the *New Bedford Standard-Times*. In these interviews, he took strong issue with the Pentagon military leadership. As an artillery officer, he felt that the emphasis was being placed on the wrong military measures. General Shugg was an artillery commander in the Korean War. He directed the defense of Hungnam from which hundreds of thousands of United Nations soldiers and Korean refugees were evacuated after the Chinese armies poured over the Yalu River border. Earlier, General Shugg had been at the Choisin Reservoir and his artillery helped the Marines there to escape. While in Korea, and after his return in September, 1951, and up to his retirement, General Shugg reported that he made every effort to register his point of view with the Pentagon leaders and his retirement resulted from his unwillingness to let the matter drop. In view of the Korean emergency, some of General Shugg's comments are of particular interest: "Against a backward Chinese Army equipped principally with rifles and hand grenades," said General Shugg, "we, with air and naval superiority, have achieved a stalemate. If all-out war had resulted, we would have been short of guns, ammunition and tanks." He blames this on the fact that our military leaders consider artillery and armor and tactical air support secondary features. Nevertheless, he says, these are the backbone of the Soviet Army.

According to General Shugg, the theory of war fostered by the Pentagon is known as the Collins-Gavin theory, named after General Collins and Lieutenant-General James M. Gavin of the Air Force. This theory calls for a series of atomic explosions followed by a mopping up with air-borne infantry, he said, and results in neglect of artillery, tactical air power, and armor — the foot soldier's fire power. Some other significant quotations: "You cannot use atomic weapons on armies that operate by infiltration and do not mass." "In Korea," said General Shugg, "I made a tour with a general from Washington who inspected the front and most of Korea. He is a recognized expert on atomic weapons. When he was about to return to the States, I asked, 'General, how many atomic bomb targets have you seen?' 'Just one,' he replied. 'That was right behind our own lines the other night when Jack Benny was giving a show for the men and 5,000 assembled. I saw no targets among the Chinese.'"

While on the subject of atomic warfare, it is perhaps appropriate to report that your Secretary was one of those who

appeared on the program of the symposium at M.I.T. last June when "Building in the Atomic Age" was the subject. From a paper on fire effects which was contributed to that symposium, a small book has been made entitled *A "First Book" on Fire Safety in the Atomic Age*. This book is 84 pages with 20 illustrations and a comprehensive bibliography and is published by the National Fire Protection Association.

A clipping in May in the *San Francisco Chronicle* reports that Sydney G. Walton, Vice-president of the Matson Navigation Company and San Francisco civic leader, has been named a vice-president of Kenyon and Eckhardt, Inc., advertising agency. He was scheduled to assume his new post July 1, in charge of the agency's West Coast offices. — The New York Shipbuilding Corporation announced in July the appointment of Captain Roswell B. Daggett, USN (retired), as works manager. Captain Daggett joined New York Shipbuilding after his retirement from the Navy in 1950. He lives in Collingswood, N.J.

Admiral Albert Noble of Toledo, Ohio, has been made a member of the board of directors and executive committee of the Nordberg Manufacturing Company in Milwaukee. He had been vice-president and general manager of the Martin-Parry Corporation of Toledo after his retirement from the Navy in 1951. The Nordberg Manufacturing Company, according to the *Milwaukee Journal*, in which this information appeared, has been a leading producer of Diesel engines for both ship and stationary power uses.

Jack Keck reports that he is living in Torrington, Conn., and he is responsible for calling to my attention a clipping from the *New York Herald-Tribune* of September 30 about Denton Massey '24. This reports that Massey has been named general manager of European operations for the Willys-Overland Export Corporation. Massey has served as consulting engineer for various American and Canadian firms and, at one time, was a member of the Canadian Parliament.

Returns from the first of letters to the Class about the reunion brought in a number of additional items of information. One of these is that Bob Henderson is toll service engineer for the American Telephone and Telegraph Company. He reports his daughter Barbara is graduating from Mt. Holyoke College next June. Another is that Preston Woodling has been teaching accounting at Burdett College, Boston, for several years. Beginning September 1, he will be an instructor at Babson Institute. He and Mrs. Woodling live in Marshfield, Mass.

A release issued by the U. S. Atomic Energy Commission in September announces that the commission's committee of senior reviewers has been increased from four to six members. This committee was established six years ago to advise on the classification and declassification of scientific and technical information. The reorganization of the committee specified that membership would be for five-year terms. The new committee members include Thomas B. Drew, head of the De-

partment of Chemical Engineering, Columbia University.

Dave Skinner sent out in October the first announcement about the 1952-1953 Alumni Fund. By the time these notes appear, you will perhaps also have the second mailing about the 30th reunion next June. Please respond to these mailings if you have not done so already. — HORATIO L. BOND, Secretary, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass. HOWARD F. RUSSELL, Assistant Secretary, Improved Risk Mutuals, South Broadway, White Plains, N.Y.

• 1924 •

Ed Wininger has redeemed himself. He made up for the complete absence of pictorial mail last summer by a couple of very informative letters this fall. All is forgiven. In September, there was a big jamboree of civil engineers in Chicago, celebrating the centennial of their society. Of course the place was overrun with M.I.T. men, three of them from our Class: One was Ed, another Gordon (Iron Man) Hook, the w.k. patent attorney, and the third, Richard T. Lassiter. We told you last spring that Dick had moved to Chicago, but at that time we didn't know what he was doing. Now it appears that he is chief engineer for Western-Knapp Engineering Company, Chicago office.

And then just the other day Ed crashed through again with details of the New York Club's annual beer-and-steak party at Mr. Jake Rupert's establishment. There was, as usual at these affairs, a goodly turnout. Among the '24 steak fanciers were Johnnie Fitch, Paul Cardinal (how did Paul rate this party — he's an outlander from Nutley), Wink Quarles, Nate Schooler, Bill Correale, Henry Zeiger, Ollie Jones, George Francis DiSomma, Elkonon Honigman, and, of course, Ed Wininger. Three new grandpappies in attendance — Messrs. Fitch, Correale, and Cardinal, but, says Ed, "No cigars!" Evidently a quaint old custom is passing on.

George Parker, still based in Newburyport, has been in Washington for his firm of Anderson-Nichols and Company for some time. Recently the senior partner showed up with a new recruit, a gentleman who was to become the firm's Washington representative, and who should it be but Vincent K. Cates, former contractor, cement tycoon, Seabee, and most recently of the Navy's Bureau of Yards and Docks. A reunion was held on the spot.

"Management Has Lost Contact with Foremen, Steel Executives Says." So ran the head in a recent *Wall Street Journal* story. "You have been unintentionally discriminated against and victimized by the development of our great industrial system. The average worker can learn more about company policy by asking a union official than he can by asking his foreman. It's no fault of the foreman. It's the fault of the men over him." The executive, speaking to the National Association of Foremen, was the president of the Harvard Business School alumni, Edward J. Hanley. No indication of what Red was going to do about it.

The New York State Society of Professional Engineers, at its annual meeting last June, heard retiring President H.

Gregory Shea's swan song and honored Consolidated Edison's senior engineer Anatole R. Gruehr for his efforts on behalf of the engineering profession. The term "retiring" applies only to Greg's change in status. In another part of the country, additional honor has come to James F. Crist of Birmingham, President of the Gulf Power Company and Vice-president of the Southern Company. It's SASI President Crist from now on. In keeping with the times, that seems to be the preferred way to refer to the Southern Association of Science and Industry, a "non-profit, non-political organization devoted to the study and development of resources of 14 southern states." Sounds most impressive.

George W. Emerson, Jr., has evidently given up being a farmer. He's come down to Wellesley from his home of many years in Claremont, N.H. And another man who has returned to Boston is Frank J. McSherry, ex-general, ex-labor consultant to the governor, Canal Zone. Colonel George C. Reinhardt has been transferred from the Industrial College of the Armed Forces to nearby Fort Belvoir, the engineering school. This information comes a wee bit late, but Emilio del Prado has just notified us that Gregorio W. Sison, who was in Mechanical Engineering but did not graduate with us, died some 20 years ago.

We have a new class representative this year on the Alumni Council, governing body of the Alumni Association. It's G. Raymond Lehrer. New directory of the association shows a number of us active in a variety of ways. Alumni term member of the M.I.T. Corporation, Charles Allen Thomas. Committee memberships include Carl F. Muckenhoupt, Friends of the M.I.T. Library; Avery A. Ashdown, Historical Collections; Francis A. Barrett, Honorary Member; Holland H. Houston, National Nominating. On Departmental Visiting Committees are James H. Doolittle, Aeronautics; Andrew P. Kellogg, English and History. And representing M.I.T. Clubs on the Council are Ashdown, George Knight, Herb Stewart, and your Secretary. Incidentally, George represents San Francisco, your Secretary, Los Angeles. With so many of our Class serving as officers of the Los Angeles Club, this gives us practically control of the West Coast.

In club affairs we have a fair sprinkling of officers. In Detroit, Everett V. Martin is treasurer; Honolulu, Samuel L. Graham, secretary; Los Angeles (here's the big one), Rockwell Hereford, president, William H. MacCallum, vice-president, and Philip A. Herrick, secretary; Manchester, N.H., Blaylock Atherton, secretary-treasurer; Mexico City, Thomas M. Nevin, president (looks as though this is going to be a permanent assignment for Jack); New York City, H. D. Kinsey, vice-president. And there's a new outfit known as the Educational Council, Alumni who are the Institute's representatives in their communities, working principally with prospective students. This list really runs into numbers, starting with Doug Elliott in Birmingham, and ending with the Honorable Arthur Tyndall in New Zealand. Suffice it to say these fellows are doing an important and eminently worth-while job.

The very high caliber of today's student body is evidence of their effectiveness.

Although this is written before election, by the time you read these notes, Christmas will be in the offing. So, to all of you a very happy Christmas and a prosperous Republican/Democratic New Year. (Cross out inappropriate designation.) — HENRY B. KANE, *General Secretary*, Room 1-275, M.I.T., Cambridge 39, Mass.

• 1925 •

Congratulations seem to be in order for a number of our classmates at this time. Theodore H. Butler, VI, Vice-president of Northampton Electric Lighting Company, was recently appointed executive assistant to the president of the Worcester County Electric Company. Ted has been associated with the utilities business since 1928 when he first joined the New England Power Service Company in Worcester. He later became supervisor and assumed managerial positions in several New England Electric System subsidiaries.

Ken Robie, I, has been made superintendent of the Water Department for the town of Brookline, Mass. I understand that Ken assumes considerable responsibility with this new position, although there has been no opportunity as yet to discuss matters with him. William L. Carroll, VI, has recently been elected treasurer and director of the Westinghouse Electric International Company.

Congratulations of another variety are in line for Tom and Ilona Killian, VI-A, who, on August 28, 1952, announced the birth of Thomas Joseph.

It is with sorrow that we announce the passing on August 12, 1952, of Robert R. Crosby, IV, of Cedar Heights Orchards, Rhinebeck, N.Y. He suffered a heart attack while attending a convention of fruitgrowers at Rutland, Vt. He is survived by his widow and two daughters.

A letter from Murray P. Horwood of the Class of 1916 indicates that the M.I.T. group in Hong Kong gave a cocktail party in his honor while en route to Rangoon, Burma. Among the 20-odd M.I.T. men who attended was Peter Sin, X. At about the time this letter was received, an extract from the *South China Morning Post* of Hong Kong carried the information that Sin was recently a candidate for the Urban Council. Unfortunately, we have not received information as to the outcome of the election. This newspaper article does provide some interesting information regarding Mr. Sin, who studied and practiced law in London after attending M.I.T. and was legal adviser to the Chinese consulate general and legation as well as secretary to the London Chinese Association. In 1931, he returned to practice law at Hong Kong and he has been active in civic affairs and is also a special magistrate in the Justices Court. — F. LEROY FOSTER, *Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

Here we go writing the December notes for an October 20 deadline. Your Secretary never expects to be able to say convincingly that the snowflakes are falling here in New England while the leaves are

just starting to fall from the trees as we compose these notes. As a matter of fact, we did not quite finish talking about our summertime experiences in the November issue, so let's finish with that before worrying about the snowflakes. One evening in mid-August there was a loud bellow at our front door — "Smitty" — and when the rafters finished shaking, who should appear but Art Brockelman making his first visit in 26 years. Believe it or not, the motivating force behind his visit was my sailboat — and he did not come down for a sail either. Early in the summer I acquired a young lad for crew whose home was in Fitchburg, next door to Art. My crew's family persuaded Art to pay them a visit and then delivered him right to my front door. Arthur's jovial manner and general appearance have not changed in 25 years, although his thick, black hair is now thick and white. I did my best during the visit to persuade Arthur to let me measure his girth, but instead he promised to send it to me. As you may guess, I am still waiting for the measurements. If Arthur wasn't well fed he would be a poor advertisement for the Brockelman Brothers chain of super markets of which he is president.

We mentioned in our notes last month that from our living room we can see the green light flash every seven seconds out on Straitsmouth Island which is just off the Rockport mainland. We neglected to mention that this island is owned by Ed Wendell²⁵ who is a very enthusiastic Rockporter and is, at present, located in Buenos Aires, Argentina, as manager of International Telephone's manufacturing plant. Ed arrived here this summer feeling "not so good" but the Boston doctors and Rockport air fixed him up so that he flew back to Argentina in September as fit as a fiddle and incidentally went back to springtime in South America. I learned one interesting thing about that green flashing light on Ed's island — it is powered by expendable batteries that last about five months, flashing day and night. On a recent trip to Wilmington, Del., I telephoned Bill Vaughan at Media, Pa., who advised that one of his sons, Douglas, enters high school this fall while his other son, Bill, enters Franklin Marshall College at Lancaster, Pa. Young Bill has quite a flair for drawing — I saw some of his work a few years ago.

Another bit of news — this involving congratulations to our Class Agent, Pink Salmon: A recent promotion makes him trust officer for the Merchants National Bank of Boston. Ben Howe has written us from Denver that his new address is 833 23rd Street, and he asked for Dick Plummer's address which we may as well pass along for anyone else who would like it. It is Edificio Internacional 962, Paseo de la Reforma, Mexico 1, D.F. We recently received a note from Adam Stricker²⁹ telling of a promotion for Gordon Spear at Fisher Body. Gordon has been made director of the forward planning section of the Finance and Accounting Division — congratulations, Gordon!

As you know, Bud Wilbur is head of the Civil and Sanitary Engineering Department at the Institute and, consequently, gets around to engineering meet-

ings. In June, he attended a conference on earthquakes and bombs at U.C.L.A. While in Los Angeles, he looked up Bruce Powers who happened to be in Alaska, but Bud did see Mrs. Powers and took her to dinner as a matter of fact. Before someone calls me Walter Winchell Smith, however, let me explain that Bud told me this in Mrs. Wilbur's presence. At the Chicago Engineering Centennial in September, Bud met our coed, Mary Saroka, who is with the Washington, D.C., Corporation of Engineers as hydraulic engineer.

The M.I.T. Club of Chicago had a dinner for M.I.T. engineers at the convention and it is not surprising to learn that two '26 men were on the committee: Bruce Humphreville and Deke Taylor. Bud saw both of them and we hereby extend their best wishes to the Class. We were reminded by our comments at the start of these notes that they will reach you in December. Hence, our first greetings of the season will be to the Class. May each of you and your families have a very Merry Christmas and a prosperous New Year. We'll see you and hope to hear from you in '53.—GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemours and Company, Inc., Room 1420, 140 Federal Street, Boston, Mass.

• 1927 •

Back on a routine basis after many months of Class Book writing and reunion, I find there are very few notes to record.

The magazine *Photography* has announced citations to 10 individuals and organizations for their contributions to *Photography*. One award was made to Harold E. Edgerton for development of the high-speed electronic flash.

Lincoln K. Davis, 1330 Main Street, Brockton 27, Mass., writes: "Although I am an alumnus of Dartmouth, where my first and principal loyalty lies, I have not forgotten M.I.T. entirely. Anyway, I am doing engineering, mainly mechanical and of a 'gadeteering' nature, for the Foxboro Company, where I am officially known as engineering assistant—which covers a multitude of sins."

Howard P. Ferguson, who has been chief of the refining control division since 1943, will become manager of both Sohio's No. 2 refinery and Lithograph Can Factory in Cleveland. He joined Sohio in 1932 as an assistant to Mr. McConnell. Bird and Son, Inc., announces the appointment of Howard O. Woods as director of marketing. He will be in charge of Bird and Son's advertising and marketing activities. Mr. Woods was vice-president and director of marketing for Towle Manufacturing Company, Newburyport, before joining Bird and Son. He previously had been senior management consultant for McKinsey and Company of New York.

The Brooklyn *Record* gives the following account: "Talking about electricity, the other afternoon we thought the fathers of Rotary were off their beans when they listed Wes Meytrott, of Con Edison, for a talk on 'How we get our electricity.' It sounded so juvenile. The talk was terrifically interesting and the slides which illustrated the lecture were equally ab-

sorbing. Wes, we learned, used to be an orchestra leader in his M.I.T. college days."

A recent article in the Boston Sunday *Herald* gives us the following information: "The 11-year-old firm of Barkley & Dexter soothes industrial production headaches from sausage to safety pins, and cures them by building a machine. It builds it for big and little business in eight months to 2 years. Like the wartime Seabees who conceded that the impossible 'might take a little longer,' round-faced, fortyish, humorously serious Robert G. Dexter with a background of M.I.T., Sikorsky, and Fairchild aircraft design, admits that 'we can lick almost any problem today. It's usually a question of "is it worth it?"' 'We act as an extension of other people's engineering departments,' the Lexington resident explains of his General Electric-International Business Machines-Gillette clientele. 'We build a machine for a job, not a line of machines.' Dexter is one and the younger partner of this firm of 50 mechanical, optical and electronics engineers, layout men, technicians, designers and machinists who operate at 528 Commonwealth Avenue. They build machines from trial and error models or mock-ups. Sometimes they can work right from a drawing board. They sell customers by colored movies of their machines in action. 'Once in a while,' the laconic Dexter concludes, 'we dream up a machine for ourselves. The current dream is a low-priced, compact gadget to ward off the effects of an atomic attack and get behind the Iron Curtain for world peace.'"

We still have not come out even on the Class Book. Orders can be sent to the undersigned at \$8.50 per copy, and will be most gratefully received.—JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Aviation Department, 50 West 50 Street, New York 20, N.Y.

• 1931 •

Unfortunately, your Secretary was unable to meet the deadline for material to appear in the November issue of *The Review* and therefore this month's account will be a double order. Alumni Day saw the usual group gather for the luncheon and banquet, and included Hank Ahlberg, Dick Baldwin, Gordon Brown, John Dockstader '42, Norm FitzGerald, Harold Gurney, Lou Hesselschwerdt, Otto Kohler, Howard Richardson, D. B. Sinclair, Ralph Simes, John Swanton, and Chuck Turner. What we lacked in number we made up in enthusiasm and good fellowship. It was a good meeting and the next reunion was one of the topics that drew much discussion. Chuck Turner has been assured of a place on the reunion committee.

Horace Ford, Jr., sent a nice letter covering his activities for the past few years and I wish more of you would follow suit. After service in the Ordnance Corps during World War II, he was well settled in the New York City Soundsciber distributor's organization when the Army beckoned again and in 1951 he was recalled for another two-year period at the Rochester Ordnance District as chief of the Industrial Division. Horace has three

children, Carol, 18, Margot, 16, and Linda, 10, who, with Mrs. Ford, are living in Old Greenwich. It is a long ride from Rochester to Old Greenwich. He also included a note that he had seen Lieutenant Colonel Glenn Goodhand who was on leave prior to heading for SHAPE in Paris. Glenn had just completed a year at the Command and General Staff School at Leavenworth, Kansas. According to Horace, Glenn hasn't changed a bit and looks the same as ever.

Among the news notes that have trickled in was a wedding announcement in which Mrs. Pauline Robeson announced the marriage of her daughter, Marjorie Loreen, to Donald Langland Dunklee. The wedding took place at Winnipeg.

Our distinguished member, Gordon Brown, was again the recipient of high honor when he was presented the George Westinghouse Award for 1952. The presentation was made at the annual dinner meeting of the American Society for Engineering Education on June 26, 1952, held at Dartmouth College.

A news note from Orono, Maine, announced that Jonathan Biscoe of our Class had been promoted from associate professor to professor of physics at the University of Maine. Quite a few of our members are to be found in the teaching profession.

Your Secretary, literally and figuratively, bumped into Art Newell at the Coop the other day. Art looks well and, with the exception of a slight increase in his middle dimension, hasn't changed. He promised to send me a résumé of his travels and I hope that he keeps his word. Letters from others will also be gratefully received.—AUGUST L. HESSELSCHWERDT, JR., *Secretary-Treasurer*, Room 3-242, M.I.T., Cambridge 39, Mass.

• 1932 •

Bill Foster, Sudbury, Mass., is commanding officer of the 418th Engineer Aviation Brigade of Boston, one of the first Army Reserve units to undergo summer training this year, and he directed training operations at Fort Belvoir, Pa. Outside the Reserve, Bill is methods engineer in the General Motors Assembly Division in Framingham and is serving on the staff at Boston University, where he teaches industrial management. During World War II he served with Headquarters, U.S. Army Service Forces, at the Pentagon in Washington; and toward the end of the war was on General MacArthur's staff at AFPAC in Manila.

Hutch Hutchinson is with General Mills, St. Paul, Minn., as manager, Chemical Department, New Products Commercial Research. He says his life has been full and his 17 years of research and development work at General Mills, including laboratory, pilot plant, economic, market research, and sales development have been interesting, stimulating, and rewarding. He married Katheryn A. Wergedahl in 1935 and they have five children. His wife and children took a 60-day camping trip alone over Alcan Highway to Alaska in the summer of '51, Hutch joining them for the return trip by

boat and U.S. highways during his vacation. He reports many frontiers still challenge and offer opportunities for adventure and profit. It was good to see him at reunion.

Rolf Morral was chairman for the Pacific Northwest's First Metals Branch and Fifth Industrial Minerals Division meeting in Spokane, Wash., May 8-10. He is head of the X-Ray Diffraction Department of the Division of Metallurgical Research for Kaiser Aluminum and Chemical Corporation in Spokane and lives with his wife and four children at 617 14th, Spokane 14, Wash.

Colonel John L. Person has been appointed engineer officer for United States forces in Austria. He was formerly stationed at Fort Leonard Wood, Mo. A graduate of West Point in 1929, he served, in the Normandy, northern France, Rhineland, and Ardennes-Alsace campaigns during World War II. His wife, Beth, and son, John, Jr., 17, live at 340 LSU Avenue, Baton Rouge, La.

Vinu Shah has been with Poona Electric Supply Company, Ltd., Poona, India, since 1935, as engineer and now general manager. His company supplies electricity within a circle of 14 miles in and around Poona. His community service activities include serving as a committee member of Shri Mahavira Jaina Vidyalaya (which is a hostel for Jaina boys to pursue their studies and give loans to deserving students to be repaid by them), and as a member of Flag Day Committee for helping families of disabled former servicemen. He says he would like to come back to M.I.T. for a refresher course, provided circumstances permit. If Vinu would organize a good tiger hunt, we might take the refresher course over there.

We regret to announce the death of Louvian G. Simons on June 10. He had been associated as an engineer with Charles T. Main, Inc., of Boston since 1945 on paper and pulp mill engineering projects. His wife and two children survive.

There were eight members of the Class of '32 at the annual clambake of the M.I.T. Clubs of Fall River, New Bedford, and Rhode Island — Al Daunis, who just finished a very successful term as president of the Rhode Island Club, Fred Miner, Bill Barker, Stewart Phillips, Isaac Schwartz, Morris Etstein, Lester Glickman, and Leo St. Aubin. This year the bake was held August 19 and, as usual, at the Bristol, R.I., estate of Rudolf Haf-fenreffer '95. It is a beautiful setting for a terrific repast, and any M.I.T. men who are in this locality would find it most enjoyable. Fred Miner is living at 1090 But-tonwoods Avenue, Warwick, R.I., and is employed as chief engineer of the Welsh Manufacturing Company of Providence. His wife, Helena Ruth, came from Ruth-erford, N.J. They have four children: Fred, Jr., nine, Deborah, eight, Kenneth, six, and Judith, three. Morris H. Etstein, 51 Burnett Street, Johnston, R.I., is the treasurer of the National Chain Company of Providence. His wife is the former Myra Davis and they have two children, Lee, 11, and Ann, five. Stewart Phillips is manager of Sandstrom Carbide Prod-

ucts Company of Warwick, R.I. He lives at 93 Grandview Drive, Warwick, R.I., and is a happy bachelor. Along that line, Ike Schwartz is a well-known pediatrician and trout fisherman operating in and around New Bedford, Mass. In 1937 he married Caroline Mekelburg and they now have three children, aged 14, 4, and 2. Leo St. Aubin of 85 Newton Avenue, New Bedford, Mass., is personnel director of New Bedford Rayon Company, Delaware Rayon Company, and New Bedford Knitting Company. His wife is Nada L., and they have four children — Marjorie, 12, Robert, 9, Richard, 7, and David, 3. — ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Mich. *Assistant Secretaries*: WILLIAM H. BARKER, 45 Meridith Drive, Cranston, R. I., ROLF ELIASSEN, Room 1-153, M.I.T., Cambridge 39, Mass.

• 1935 •

Bits of news that have accumulated since 1935 last went to press in these columns include word that Bill Cross has moved back to Neenah, Wis., from Childersburg, Ala. Fellows at reunion in 1950 will remember Bill's travel record from Neenah to Marblehead was bettered, only by Carl Lavenas from Buenos Aires. Bill works for the Kimberly-Clark Corporation. Art Croxson is another new resident in Neenah, having recently moved from San Mateo, Calif. Bet Bill and Art have had to patronize the "woolies" counter. Lieutenant Colonel Larry Stone is one of 598 officers enrolled for a 10-month course at the Army Command and General Staff College, Fort Leavenworth, Kansas. Tom Keeling, Assistant Vice-president and Chemical Division sales manager of Koppers, Pittsburgh, is on a six-month leave to serve as deputy director of the Chemical Division of the National Production Authority in Washington. Hal "Look-for-the-Red-and-White-Label" Bemis has been appointed assistant to the vice-president, Research and Development, Campbell Soup Company. Except for a stint of some duration and distinction in Uncle Sam's Army, Hal has been in the soup business ever since graduation — the past five years as assistant and later general manager of Campbell's Canadian subsidiary. A Providence paper article on the part research plays in new businesses cites John Taplin's invention of an improved compressed air regulator as a keystone for the Kendall Controls Company, a firm John was instrumental in founding.

Several months ago the writer collaborated with Pete Grant on a letter to all members of the Class of 1935. The news items in that letter are repeated here in somewhat more detail.

Kenneth P. Brown was married to Kathlyn Ann Bailey in Washington in June. Ken spent two years in Course XV at the Institute, was graduated from North Carolina State College, and took graduate courses at Columbia. At present Ken is captain in the Army Reserves. Robert Clarke, graduate in Mining Engineering, was elected president of the M.I.T. Club of Central Massachusetts in May. Goody lives in or near Worcester. Ermano Garaventa made his second busi-

ness visit to England for Hamilton Standard Propellers this spring. Gary has been with the Hamilton Division of United Aircraft ever since graduation. At present he has charge of production engineering and lives in Manchester, Conn. Harold M. Oshry, graduate in Physics, was elected vice-president of the Crawfordsville Foundry, Crawfordsville, Ind., this past June. Harold served in the Army Ordnance Corps during the war and has been a manufacturers' representative and engineering consultant for several concerns in Indiana. Last spring Samuel P. Brown was admitted to partnership in the firm, Coverdale and Colpitts, consulting engineers, 120 Wall Street, New York City. Nelson Thorp is president of the Y.M.C.A. in Westerly, R.I. A noteworthy accomplishment of the association during Nelson's officership is the construction of a new Y.M.C.A. building.

John Bradner, President of Lees-Bradner Company, Cleveland, was re-elected for a third term as president of the Department of Ohio, Naval Reserve Officers Association, last spring. Johnny holds a lieutenant's commission in the Reserves and lives in Shaker Heights. Perry Ware, electrical engineer with the Simplex Wire and Cable Company, Cambridge, is chairman of the Technical Group on Insulation for A.I.E.E. Biss Alderman's election as permanent trustee of his preparatory school, Williston Academy, added another post to the many he holds in professional and community organizations. Biss heads an architectural firm with offices in Springfield and Holyoke. Somehow he finds time for officer or membership positions in the Massachusetts State Association of Architects, Western Massachusetts Engineering Society, Architectural Society of Western Massachusetts, American Standards Association, Holyoke Savings Bank, First Congregational Church of South Hadley, Holyoke Hospital Association, Boy Scouts, Community Chest, and Rotary Club.

Classmates who attended Alumni Day exercises in June included Bill Abramowitz, Randy Antonsen, Bill Brockett, Art Cohen, Jack Colby, Bev Dudley, Pete Grant, and Tom Rinaldo.

Reunion in June, 1955, may seem a long way off, but a year and a half has a way of passing quickly. Good-natured joking is going the rounds for a reunion in Kansas City or San Francisco or Louisville or New Orleans. This suggests an idea of having reunions (plural) in several locations so fellows who cannot reach the vicinity of Cambridge can get together anyway. This scheme would take a bit of planning. How about hearing from some volunteer planners? — J. Barton Chapman, *Secretary*, 7 Lalley Boulevard, Fairfield, Conn.

• 1938 •

By the time this is circulated, if everything proceeds on schedule, you will have received a letter giving the details of the 1953 reunion. This is another reminder to make very effort to attend. Lou Bruneau is the reunion chairman and has the assistance of Bob Johnson, deputy chairman for the Boston area, Ed Hadley on publicity, and Dale Morgan as treasurer.

News items are brief: Stanley Gaynor, President of the Central Square Businessmen's Association, is commerce and finance chairman of the 1952-1953 Salvation Army appeal in Cambridge. Ken Gunkel, of W. R. Grace and Company, is now located in Lima, Peru. Lieutenant Colonel Milton Wallace is now attending the Army Command and General Staff College at Fort Leavenworth, Kansas. — ALBERT O. WILSON, JR., *General Secretary*, 24 Bennington Road, Lexington 73, Mass. *Assistant Secretaries*: DAVID E. ACKER, 210 Woburn Street, Lexington 73, Mass.; FREDERICK J. KOLB, JR., 211 Oak Ridge Drive, Rochester 12, N. Y.; RICHARD MUTHER, 116 West 67th Terrace, Kansas City, Mo.

• 1939 •

The news is beginning to come in much better this year, thereby giving us much more to pass on to the Class. Keep up the good work of writing to us so that we all may keep up with your activities. Perhaps the one member of our Class who has been seen by more of us than any other is Bob Pastene. He is rapidly approaching star status as a television actor. He has been seen in several Television Playhouse shows and many other plays. Plans are in the making for us to see him considerably more this coming season. Word comes to us that August P. Henry has joined Northrop Aircraft, Inc., as a design specialist. He is going to work on a long-term design program. Joseph W. Harrison has been made technical staff assistant of the Arma Corporation in Brooklyn. He went there from a business of his own.

Mrs. Marie Early Costello has made quite a name for herself as the only woman crystal-grower in America. She is working at Tracerlab, Inc., in Boston where she makes crystals for use in detecting and measuring nuclear radiation. She is married to Peter Costello who is the mechanical engineer that designed her equipment. We hear that Edward T. Armstrong has joined Toscony Fabrics, Inc., in the position of works manager. He did graduate work at the Institute. Francis W. Sargent is the director of the Division of Marine Fisheries, Department of Conservation of the Commonwealth of Massachusetts. He recently presided at a meeting of the North Atlantic Fisheries Association in Boston.

We regret to report the death of Andrew P. Rebori on September 15 in Chicago. He had been stricken the week before with polio. He was in the construction business in Chicago. Our deepest sympathy goes to his family.

We have word that Colonel Frederick O. Diercks is attending the Army Command and General Staff College at Fort Leavenworth, Kansas. He served in the Far East Command from 1947 to 1949. Colonel John D. McElheny is now serving with the Japan Logistical Command in Yokohama. Your Assistant Secretary, George Beesley, sold out his interest in the Whitemore-Wright Company, Inc., and is now associated with Angier Products, Inc., of Cambridge, Mass. Please keep the letters coming to us. Take five minutes right now to drop us a line.

— *Assistant Secretaries*: GEORGE BEESLEY, 38 Homestead Road, Lynnfield Center, Mass. MICHAEL V. HERASIMCHUK, Post Office Box 495, Bethlehem, Pa.

• 1940 •

Just as these notes were being prepared, I received a copy of the September, 1952, issue of the *Missouri Engineer*, the publication of the Missouri Society of Professional Engineers. The lead article was written by our own Garry Wright and is entitled, "Plans for City Engineering Department Offered By Ozark Chapter." It is about the proposal to change the form of government in the city of Springfield, Mo.

Dick Spalding has just been promoted to chief packaging engineer of corrugated package operations for Owens-Illinois Glass Company. Dick has been with Owens-Illinois since 1941 and previously had been supervisor of the shipping container research laboratory and corrugated quality supervisor. Tom Ferrill has been appointed engineering department head for patent prosecution, responsible to the engineering director for patents at Sperry Gyroscope Company. Tom joined Sperry in 1940 as assistant project engineer in the Radio Engineering Department and in 1941 became a project engineer. A year later he transferred to the Inventions Research Department and in 1943 went to the Patent Department as an assistant patent attorney. In 1945 he was promoted to patent attorney. Tom received his LL.B. degree from Fordham University in 1947. John Titherington, who received his M.D. from Harvard Medical School, is now practicing in Portland, Maine.

That closes the '40 notes for 1952. To each and every one of you, a Merry Christmas and a successful New Year, and a reminder that if you want a column full of interesting news in the year to come, don't forget to write to Al. — ALVIN GUTTAG, *General Secretary*, 7114 Marion Lane, Bethesda 14, Md. MARSHALL D. MCCUEN, *Assistant Secretary*, Oldsmobile Division, General Motors Corporation, Lansing 21, Mich.

• 1941 •

A release from the Army Home Town News Center tells us that Lieutenant Colonel Bill Hart is one of 598 officers who began the 10-month course at the Army Command and General Staff College at Ft. Leavenworth, Kansas, in September. Captain Theodore Fabik took command of the Coast Guard Cutter *Campbell* in September. After receiving his master's degree in Naval Engineering from the Institute in 1941, Captain Fabik was assigned to the *Campbell* (a North Atlantic weather patrol ship) as engineering officer. After a year of that duty, he was transferred to the office of the supervisor of shipbuilding in New York. He later served aboard the transport *General Meigs* and in 1944 was assigned to Boston as marine engineer for the First Coast Guard District.

Among our globe-trotting classmates is Herm Affel, now Assistant Vice-president of the Bell Laboratories. Herm was a member of a group of scientists who spent

three weeks in the Far East last summer, studying problems involved in adapting electronic principles to battlefield conditions. Clayton Baer has been appointed service engineer in the tool sales division of Crucible Steel Company of America. He deals in field work relating to applications for Crucible tool steel products, and liaison between the customers and the research and production departments at the mill. Clayt went to Crucible's Sanderson Works in Syracuse, N.Y., after graduation, and became, successively, supervisor for the metallurgical laboratory, assistant chief metallurgist, and chief metallurgist. When the facilities in Syracuse were consolidated into the Sanderson-Halcomb Works, he became general supervisor of the metallurgical department, and, in his new position, he still is located in Syracuse.

Lloyd Wilson has been promoted to engineering section head for measurements in the electrical measurements laboratory of the Sperry Gyroscope Company in Great Neck, N.Y. He has been with Sperry since graduation, and in the laboratory since 1945, where his work has been chiefly in microwave measurements. Howard O. McMahon, science director of Arthur D. Little, Inc., has received the Frank Forrest Award for 1952 for his papers "Thermal Radiation from Partially Transparent Reflecting Bodies" and "Thermal Radiation Characteristics of Some Glasses." Since 1948, he has conducted fundamental research on the structure of glass at A. D. Little, under the sponsorship of the Owens-Illinois Glass Company, using infrared reflectivity techniques, and he has published several papers on the subject. His work has established new physical laws which provide the basis for more easily measuring the temperature of glass optically during its manufacture. Bill Ahrendt is serving on the American Institute of Electrical Engineers Committee on "Terminology and Nomenclature of Feedback Control Systems."

Mrs. Janet Nash Watson and Lars Nordenson were married on September 6, and are now living in Noroton, Conn. Mrs. Nordenson is a graduate of the Walnut Hill School in Natick, Mass., and attended the Child Education Foundation in New York.

Several new addresses arrived too late for the last issue, so we'll try to catch up this time: Robert E. Bailey, 4 Orchard Street, Port Washington, N.Y.; Henry Faul, U.S. Geological Survey, Denver Federation Center, Denver, Colo.; Lieutenant Colonel Joseph O. Fletcher, Route 1, Bennington, Vt.; Sanford E. Glick, 79 Long Hill Street, Springfield, Mass.; James L. Hall, 1344 American Way, Menlo Park, Calif.; Edward A. Hamacher, 120 North Broadway, Irvington-on-Hudson, N.Y.; Pelle E. G. Hammarlund, A.S.E.A., Vasteras, Sweden; Sterling H. Ivison, 1703-37th Street, N.W., Washington 7, D. C.; James E. Jump, James E. Jump and Associates, 500 Fifth Avenue, New York 18, N.Y.; Stephen H. Kinney, 108 East State Street, Clovis, N.M.; Roger W. Loewi, 440 East 20th Street, New York 9, N. Y.; John W. Ludwig, 1616 Pratt Street, Dallas 8, Texas; Elwood L. McGee, Sunset Ridge Road, Northbrook,

Ill.; Edward K. Miller, 5012 Greenleaf Road, Baltimore 10, Md.; Commander Walter A. Moore, 4614 Maple Avenue, Bethesda 14, Md.; John W. Mullen, Buck Road, Holland, Pa.; Raymond G. O'Connell, 432 Lothrop Street, Grosse Pointe Farms 30, Mich.; George H. Palmer, American Bureau of Shipping, 327 South LaSalle Street, Chicago 4, Ill.; William L. Poole, Inglehart Division, General Foods Corporation, Evansville, Ind.; William B. Sheard, 206 Searles Lane, Pleasantville, N.Y.; Edward W. Sheridan, 802-D Park View Apartments, Collingswood, N.J.; John C. Sluder, The Nestle Company, Inc., 2 William Street, White Plains, N.Y.; Walter A. Sokolsky, 805 White Street, Springfield 8, Mass.; Captain Harry Sosnoski, 2113 "S" Street, N.W., Washington, D.C.; Robert P. Tilley, 4510 Stearns Street, Long Beach 4, Calif.; Kenneth Tsunoda, 424 East 52nd Street, New York 22, N.Y.; Irving H. Van Horn, 5045 College Avenue, San Diego 15, Calif.; Edward B. Weinberger, 6380 Caton Street, Pittsburgh, Pa.; Robert L. Wooley, 14 Bradford Court, Syracuse 7, N.Y.; Frank S. Wyle, Wyle Labs, 340 East Franklin Avenue, El Segundo, Calif.

Remember, the reason for printing all these changes is to keep the Class in touch with one another (and with the Secretary, I hope). If any of you have any suggestions or ideas along these lines, be sure to let me know.—IVOR W. COLLINS, *General Secretary*, 28 Sherman Road, Greenwood, Mass. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

• 1942 •

The clipping service brings us news from all parts of the country this month about recent achievements of our classmates. John A. Finger, Jr., is again in the news. He has just been appointed assistant professor of education by Colgate University. Jack, Mary Elizabeth, and the three children have moved up to Hamilton, N.Y., and are now enjoying the fall foliage in this very charming college town. Also in the academic news is Clinton D. Cook who has been appointed assistant professor of chemistry at the University of Vermont. Clinton took his bachelor's degree with us and received his Ph.D. from Ohio State University. The newspaper clipping reporting this event came with photographs of two pretty women instructors at the University of Vermont, but no picture of our Clinton.

Oliver P. Swope, formerly of Boston, is now manager of planning and engineering of the George F. Alger Company. This firm is a large motor-carrier concern operating in the Midwest. Ollie and family are now located in Detroit. Following up last month's announcement of Nancy Page's engagement to Conrad Lau, we have since heard that they were married in Dallas, Texas. Conrad is with the Chance-Vought Aircraft Company.

Charlie Speas, our retired Reunion Committee chairman, says we have a few beautiful coaster ashtrays left. These fine china pieces, with the M.I.T. seal and "1942-1952" fired into the surface, will be sent directly to you upon receipt

of \$1.50 by him (17 Crown Ridge Road, Wellesley, Mass.). Charlie also reports that the class treasury now stands at \$37.13. This sum we have put to work in a local savings bank to earn its 2½ per cent.

The Alumni Fund report for last year is for considerably larger figures—it shows that the Class of 1942 contributed \$2,251.50. The 158 men and women who participated represented 14 per cent of the class roster. These folks and quite a few others have given over \$23,000 in the 10 years since we graduated. Let's make it a \$2,500 year in 1952-1953 to give our new class agent, the afore-mentioned Charles A. Speas (also class vice-president), a good send-off. Incidentally, we are proud to note that our average contribution is higher than that of classes which have been out of M.I.T. about as long as we have. Our participation rate, however, is below the over-all alumni average of 17 per cent. Since this note reaches only those folks who have already contributed, we are directing these comments to your friends through you. Please send back to me any items of interest on classmates' activities that you pick up in the process. The more news we get, the more we print!

Address change notices from the Alumni Office tell us that Captain Jack Arend is back in this country at Normal, Ill. Welcome home, Jack! They also advise that Graham H. Bell has moved to Jenkintown, Pa.; Harry N. Blakeslee to San Mateo, Calif.; Albert G. Downing to Winchester, Mass.; Lyonel T. Finizie to Bridgeport, Conn.; Leon M. Flanders, Jr., to Silver Spring, Md.; Morton E. Goulder to Windham, N. H.; Robert B. McBride to Charleston, W.Va.; Daniel R. McNeal, Jr., to Philadelphia, Pa.; Harry J. Paletz, Jr., to Madison, N.J.; Norman P. Pinto to Halesite, N.Y.; Robert N. Secord to North Reading, Mass.; Zigmond W. Wilchinsky to Westfield, N.J.; Robert Wilson, Jr., to Bethlehem, Pa.; S. Edward Yoder to Galveston, Texas; and Fred L. Chase, Jr., to Arlington, Mass.—LOUIS ROSENBLUM, *Secretary*, Polaroid Corporation, 730 Main Street, Cambridge 39, Mass. KARL E. WENK, JR., *Assistant Secretary*, 11 Ledge Road, Old Greenwich, Conn.

• 1943 •

We are exceedingly proud to have the opportunity of recording in these notes that Kenneth Wadleigh has won a Goodwin Award. The award, presented to him during commencement last summer, is made only when a member of the Faculty displays particularly effective teaching performance. Ken, as most of you will recall, is an assistant professor in the Mechanical Engineering Department. Nominations for this award are made either by the Student-Faculty Committee to the dean of the Graduate School, or through regular departmental channels. All of the Class will join me in extending our heartiest congratulations to Ken for his conspicuous achievement.

Honors of a different order are due the Habib Rahmans. At Habib's insistence, his wife, Indrani, who is a black-haired beauty, entered the Miss Universe contest

as an entrant from India. She won the regional finals in Bombay this spring, after which she was flown by one of the contest's sponsors, the Pan American Airways, to the United States for the final finals at Long Beach, Calif. The other sponsors were Universal International Studios and Catalina Swim Suits. My informant's chronicle ends at this point, and so does mine, for neither he nor I know how Indrani fared in California. Do you? Incidentally, Habib is chief government architect in West Bengal.

Harold Gershenow and a small tool factory in Haifa, Palestine, are the principals of our next item. After graduation, Harold served about four years with the Navy. Upon release, he became president of the Halmore Knitting Mills, Inc., in Glen Cove, Long Island, a business which he sold in the summer of 1948 to emigrate to Israel. At first he was associated there with the Palestine Economic Corporation, a large American investment firm in Palestine. He later left this organization to set up the Dok Israel Precision Industries, Ltd., in the Haifa Bay area. His first production was pliers and wrenches, but he plans to add machinery parts in the near future to his line. He, his wife Marilyn, and their three children live in the French Carmel sector of Haifa.

News is at hand about the doings of Herbert Goldstein. He has been appointed visiting associate professor of physics at Brandeis University in Waltham, Mass. Until recently he had been affiliated with the Jefferson Physical Laboratory at Harvard University. Among the others of the Class who have moved recently are Bridgford Hunt, who is now in Brooklyn. He was formerly in Washington. Bob Kelso has left Pleasant Ridge, Mich., and is now located in Kenmore, N.Y. Bill Lacy has moved from Needham Heights, Mass., to Orlando, Fla. Keith Rumbel has left the Institute and is now living in Falls Church, Va. Sherman Sackheim has been relieved from active duty with the Army and is again in Bronxville, N.Y. Paul Speicher, now a lieutenant in the Army, is in Carmel, Calif. Guy Stearns has moved from Lawrence, Ind., and is to be found in North Haven, Conn. Herb Twaddle, until recently in Kensington, Md., is now at home at Bartlesville, Okla. Malcolm Walker has been relieved from active duty (with the Navy?) and has returned to Quincy.

It's a pleasure to help spread the news of three weddings celebrated this summer. The first, held on May 24, took place in St. George's Protestant Episcopal Church in Kew Gardens, N.Y. Married were the former Elaine Gloria Gartner and Robert Lawrie Mitchell, Jr. The second wedding was that of the former Emma Jane West and Gray C. Trembly, celebrated in June at the First United Presbyterian Church in Cambridge, Mass. The bride is a graduate of the New England Conservatory of Music. Her husband, who has done graduate work at both Technology and Harvard, was with the Radiation Laboratory during the war. This couple is now at home at 112 Gloucester Street, Arlington, Mass. The first day of August was the date chosen for the marriage of Andrew F. Hillhouse, Jr.,

and the former Helen Payne Simmonds. They were wed near Washington, in the Chevy Chase Baptist Church, to be exact. Andy's bride, whose home is in Washington, attended Salem College in Winston-Salem, N.C. Andy himself has completed his program at the George Washington University Law School and is at present with the Naval Ordnance Laboratory. The Hillhouses, after their honeymoon in Bermuda, are now living at the Quebec House in Washington.

Cupid has some unfinished business too! In May the engagement of Ruth Emily Scott to Peter G. Wiesenthal was announced by the future bride's parents. Miss Scott, whose home is in Yonkers, N.Y., is a graduate of Wells College and is presently active with the Family Service Society of the Social Planning Council of Yonkers. A fall wedding is planned for Cecilia B. Wickowski of Hartford and William Henry Peiler. Cecilia, a graduate of St. Joseph's College of Nursing, is with the Nurses Professional Registry of Hartford. Her future husband is with the Plax Corporation, also in Hartford. The engagement of Martha Whitney Floyd and William A. Selke was announced in August. Bill's bride to be, whose parental home is Pittsfield, Mass., is a graduate of the Garland School in Boston. She is now with the Columbia Presbyterian Medical Center in New York. Bill completed his doctorate at Yale in 1949 and is an assistant professor of chemical engineering at Columbia University. Incidentally, this couple plan to be married in the fall. Another impending wedding is that of Elizabeth Greenwood and Frank L. Metcalf. Elizabeth graduated from Vassar in 1951, and is a member of the faculty at Holton Arms School and Junior College. Frank is a member of the teaching staff of the Bethesda-Chevy Chase High School in Maryland. A wedding in October is planned for Betty Hotchkiss and Henry Rhodes Brown, Jr. The future bride is an alumna of Pomona College.

And that my friends is all for now. — CLINTON C. KEMP, *General Secretary*, 29 Verlynn Avenue, Hamilton, Ohio.

• 1948 •

Most of the news of this month comes directly from the newscipping agencies. I'll confess that the job of an assistant secretary would be just about impossible were it not for these wonderful organizations which pick up bits of news about '48 men from all over the world and direct it back to us for consumption in the class notes.

The most distant news was delivered to us by the International Press-Cutting Bureau of 19 Grosvenor Place, London, S.W. 1. Because this news comes from so far and also because it has that flavor that is found only in the British manner of reporting something as routine as an engagement, I'll reproduce the whole item. It is an extract from the *Yorkshire Illustrated*, Skipton. The notice reads, "Engagement of Historian and Scientist. The engagement was recently announced of Mr. Allen Calverley Sugden and Miss Alison Mary Brockbank. Mr. Sugden is the elder son of Mr. and Mrs. H. E. Sugden,

of Royds Hall, Low Moor, Bradford, and Miss Brockbank is the only daughter of Mr. and Mrs. J. L. Brockbank, of St. Mary's Lodge, York, which is part of the original gatehouse of St. Mary's Abbey. Miss Brockbank is well known as a historian. After graduating at St. Andrews University she served at the Admiralty during the war, and on her release joined the Ministry of Town and Country Planning to record buildings of historic and architectural interest in the north of England. Mr. Sugden is at present technical adviser in his father's chemical firm. He holds degrees both of London University and of the Massachusetts Institute of Technology in Boston, USA. During the war he served with the Fleet Air Arm."

If any of you who read this issue of *The Review* know Allen Sugden, you might like to send him a copy. I doubt that he is a regular *Review* subscriber and he might like to know that we considered his engagement notice a significant item of news for the class notes.

Other engagements which came to us through the channels this month include Gunnar Oleson to Patricia Ann Freise of Great Neck, Long Island. Pat and Gunnar will be married in the spring. She is a graduate of Harcum Junior College. George Macomber is engaged to Ann Drummond Leonard of Boston. George is our skiing classmate who led the ski team to so many victories during his years at Technology, and who made the Olympic team twice, only to break his leg each time and thus lose opportunities to gain further laurels. George and Ann will be married in May. Ann is a Smith girl. Marriages reported recently include Nathan Grier Parke to Ann Ryder of Bedford, Mass.; Arthur Mathison to Bernice Blanchette of Tewksbury, Mass.; Bertin Posthill to Sally Spear of Tucson, Ariz.; Francois Giraud to Pauline Moffat of Brookline; Robert Gladden Crooks to Mary Jackson of Pittsburgh; and John Barry to Marian Irving of San Diego.

One of the most pleasant kinds of news to include in the notes is that of the progress of one of our classmates, and this month we are informed that John Kirkpatrick is to open up a Midwest office for A. D. Little in St. Louis. Kirk has been with A. D. Little since graduating from Course XV where Professor Gerry Tallman recognized his talent and introduced him to the A. D. Little organization. This is an especially good break for Kirk and his wife Jane since they are both native Kansas City people.

We have also received word that Donald Graham has been appointed lecturer at the Rhode Island School of Design. Don is acting executive director of the Providence Redevelopment Agency and lecturing on the history of city planning will fit right in with his work.—WILLIAM R. ZIMMERMAN, *Secretary*, 1604 Belmar Road, Cleveland, Ohio. RICHARD H. HARRIS, *Assistant Secretary*, Lovell Road, Holden, Mass.

• 1950 •

We've received word via the newspapers that First Lieutenant Henry Simmons, Jr. (Sonny to his friends), has been awarded the Bronze Star for meritorious

service in Korea. Sonny served as a finance officer in the Taegio area. He's planning to go back to school for some graduate work, taking his lovely wife with him this time.

During the course of the last month, I literally bumped into two other R.O.T.C. graduates out here at Wright-Patterson. First Lieutenant Roy Hale, XVI, is now stationed out here doing aeroengineering work after having spent many months taking a communications course at Keesler Air Force Base. And Second Lieutenant Hal Moss was here on temporary duty from Air Research and Development Command Headquarters in Baltimore where it seems he is doing mostly administrative engineering. I've seen many M.I.T. graduates, but none other from our illustrious Class.

Lou Washauer, now stationed at the Army Chemical Center, at Edgewood, Md., was married to Janice Abrahamson in Springfield, Mass. Steve Senzer acted as an usher. And Russ Stott finally tied the knot with Anne Marie Cummings of Boston. Ed Dmytryk followed suit with his exchange of vows with Excellence Chevalier in Northampton back in September. Other weddings include: Don Bishop to Julie Post in Brooklyn. Don is working as an industrial engineer for Singer Sewing Machine Company. Bill Proctor to Jean Lamont; John Drysdale to Gertrude Rogers in a candlelight wedding in Braintree; Frank Ruccia to Katherine Petrucci at the Bradford Roof; Emmett Bradley to Ann Gary in Alexandria, Va.; Hank Sauer to Joan Marie Crawford at Oyster Bay, Long Island; and Keir Finlayson to Mary Lou Keener at South Easton, Mass. He's working for RCA at Camden. Of particular note is the marriage of two of our young architects, Marie Azzarone to Fred Bentel. (Although Marie's class officially is '51, she is really one of our Class.) All these years I've wondered what those Course IV students were doing up there in the drafting rooms all hours of the day and night. I guess that Marie and Fred drafted some plans to their own specifications. The new couple should already be enrolled in their graduate courses in architecture in Europe, where they both are with Fulbright scholarships.

We only have four engagements to report this month: Bob Jablow to Carol Jane Nusblatt; Gerry Robinson to Marilyn Rees; Fred Grant to Madeleine Batten; and Irl Duling to Lois Linton.

I'm looking forward to receiving the up-to-the-minute news from you via letters and post cards so that I can, in turn, pass it on to all the rest of the gang. We've got a pretty large mail box out here and a mailman with a sense of humor.—MYLES S. SPECTOR, *Acting Secretary*, 3114 Sunny Crest Lane, Dayton 9, Ohio.

• 1951 •

A very informal meeting of the Class of 1951 will now come to order. Of course, no roll call will be taken. So relax, gang, and let's take a look at the agenda for this month. If there are no objections (and I can't hear any at this moment), we'll start with the usual order of business: engagements, marriages, military

activities, jobs, and other news items about you guys and gals of '51. So light up your pipes, men, and get your knitting yarn, gals (or should I say slipsticks), and let's focus our attention on the events featuring the dynamic '51ers.

First, the engagement spotlight tells us that Marv Grossman is engaged to Joanne Freeman; Don Reis to Ann Frear; and Bob Jablow to Carol Nusblatt. Next, we have the following marital notices: Jim Batten and Anne Kelly were married in August at Millers Falls; Bob Cushman and Susan Hooper in November at Honolulu (Bob was working in the South Pacific area on a special project); Dick Bentel'50 and Maria-Luise Azzarone'51 (both are architects) in August at Forest Hills; Charley Fargo and Gwendolyn Van Mater in October at Newton; George Fernald and Eleanor Taft in September at Cambridge (George is in the engineering department at the Polaroid Company); Dick Fidler and Katharine Edgar at Andover in August; and Harry Kubick and Diana Warren in August at Lexington. Also, Fred Lehmann and Betty Ann Ferguson (Betty attended M.I.T.) in September at Colorado Springs; Bob Lucy and Priscilla Grant at Salem in August; Tom Maddock and Barbara Bechaud in August at Washington; Neal Neece and Lorraine Tyner in September at Dallas; Mark Nelkin and Dorothy Wolfers in August at Boston (Mark is doing graduate work at Cornell); Bill Peake and Helen Carr at Boston in August; John Richardson and Lois Hill in August at Kensington, Conn. (John is an engineer at the Linde Air Products Company); and Ron Silver and Sheila Katz in July at San Francisco (Ron is the third assistant engineer on the S.S. *Steel Artisan*). Also, Bill Santelmann and Jean Hunter at Belmont in September.

A few notes are available concerning the boys working for Uncle Sam. Steve Chamberlin is now in Korea where several others of '51 are actively engaged in that theater of operations. Good luck, Steve! Bob Knopf is flying jets in Oklahoma. The Radford Arsenal (Virginia) is employing the full talents of Chuck MacDonald. Bob Brouns is stationed at the Air Force Missile Test Center at Cocoa, Fla. Hank Curtis received his ensign's commission at the Navy's school at Newport. (Did you develop your sea legs, Hank?) Bill Gibson is making sure that production doesn't get stalled at the Charleston Naval Shipyard, South Carolina. Stan Jones is operating from Ft. Sill, Okla. Glenn Mackey (I believe he's one of the jet boys) is stationed at the San Marcos Air Force Base in Texas. Frank McKee received his commission and an award from the Society of American Military Engineers at Fort Belvoir, Va. Jim Michelman has been assigned to the Transportation Research and Development Station at Ft. Eustis, Va. Dave Rego is another '51er who received his commission from the Navy.

A change of pace! Let's take a look at some of the other diverse activities occupying the attention of classmates. John Carr is busily engaged in work at the Atomic Energy Research establishment at Harwell in England. Bob McDonald

'52 is devoting his time to research for General Electric at Schenectady. Bill Spicer is connected with the University of Missouri. Zenon Redkevitch has joined the Chemistry Department at the Georgia Institute of Technology in Atlanta, Ga. Chen-Siang Chang is teaching at the School of Mines of the University of Minnesota. Mel Rubin informs us that he is working as a structural designer at Fay, Spofford, and Thorndike in Boston.

Russ Shorey has a very interesting assignment. At present, he is stationed on a fresh-water ice island about 140 miles from the North Pole, where the average temperature for the next six months will be about 65 degrees below zero (and I used to think that some of the Boston winters were slightly cool). To make matters even more interesting, the island, on which Russ and other members of the Air Force Cambridge Research Section will be staying, is now in darkness and will continue so for another three months—until March. Russ's job: "My job will be to make a number of observations every day, on the thickness and age of the ice, the position of the island and its pattern of movement." As Russ described it, the island is a mass of fresh-water ice, several hundred feet thick, frozen into the salt-water ice of the Arctic Ocean which is seven or eight feet thick. By the way, Russ is a Geology graduate and specialized in geophysics. Now to complete our picture of the versatility of the Tech men, we should have a report of some '51ers (maybe a XV man) selling books in Australia—that reminds me of the fact, mentioned in one of the previous sets of class notes, that we do have one or two '51ers in the "Down Under" area. And we do have an author in our Class—see the November notes.

Marc Aelion took time out from his duties at M.I.T. to jot down some news. He reports that Pete Lang, Rane Curl, and he had passed the doctor's exams in May and are now starting on their doctoral theses. Marc added that he met Bob Norton at Tech; Bob was in town on a business visit from Rhode Island's competitor, Texas. No offense meant, Mr. Romano! Further news in the educational sphere of activity: Fred Weitz, XV, and John Lindholm, II, through their scholastic exploits at the "B" School, became two of the top 14 men of their class and have earned the title: "Baker Scholar." Congratulations, men!

Just before sailing for Oxford, England, Art Wasserman sent in a very extensive note about several classmates. Art says: "Les Preston was married to Ellen Johnson of Wilmington, N.C., in September. Les is working pretty hard for the Wilmington Cold Storage Company and enjoying it. Recently I met Don DeMuzio at M.I.T. He's been working on one of the projects there and I believe he will be in graduate school next year going after a master's degree. Tony Stathoplos is now attending the School of Reactor Technology at Oak Ridge. Pris Maurer has been working all year with the Fuels Research Laboratory at M.I.T. helping with the design and construction of the new facility being built for testing rockets, ramjets, and so on. This fall she plans

to take a course at B.U. in anthropology, having long had a veiled secondary interest in the social sciences in addition to her primary interest in engineering. Marv Baker is still at Tech. He worked for the Fuels Research Laboratory for a while and currently plans to remain around here working toward his doctorate in Chemical Engineering. John McGrew worked on the nuclear engineering project at Tech, with which I also was connected. John expects to work with the Carbon and Carbide Company in New York. Doug Kaufman and Al Boltax also worked on the same project—both will probably aim at the doctor's degree. Dave Ragone and Ed Hucke are also shooting for their doctor's degrees. Irv Manning has been doing research work in the field of group theory. Dick Willard is associated with the Student Personnel Office. Herb (Deadeye) Voelcker is now back at M.I.T. at the Air Force's expense for the next two years.

"My work this summer on the M.I.T. nuclear engineering project was quite rewarding. About 30 people participated in the work which was headed up by Manson Benedict'32, M.I.T.'s new professor of nuclear engineering. The group on the project included chemical engineers, mechanical engineers, physicists, metallurgists, and chemists. It was a good chance to see how all these fields become integrated in atomic energy work."

Some of Art's further comments: "Jim Nolan has been working at Tech with the hydrogen peroxide group under Professor Satterfield'43 of the X Department. Vern Kenney, after a short session in industry in Chicago, is now in the service. Jim Russell is associated with the Fuels Research Section at Tech. Marge Irby is planning to join or already has joined her husband, Dick Koenig'50, who is in the Army in Germany. Bob Butters is now working in the Army's Purchasing Department, buying scientific information for the Army. Eva Tislowitz Browder is in Boston studying at B.U." Thanks, Art! And good luck in your work at Oxford!

A few weeks ago, Gerry Burns flew into town for the week end, bound for business of Procter and Gamble. A brief get-together was arranged at Baker House. Of course, we hashed over old times and exchanged views and news about the '51ers we heard from, saw, or heard about. That's all for now, gang! Before we adjourn the meeting, can I ask you to write a few lines and let the rest of the Class know how life (and love) are treating you. See you again soon: same time, same station.—STANLEY J. MARCEWICZ, *Secretary*, Gallatin D-25, Harvard Business School, Boston 63, Mass.

• 1952 •

News of the doings of the Class continues to pour in at an uninterrupted rate; I hope I can catch up with the backlog in this issue.

Nine more members of the Class put their best foot forward and mumbled "I do." Anita Colby and Don Brown "got hitched" on September 14 in New London, N.H.; the Browns have settled down in Watertown, Mass., where Don is working as a chemical engineer in the research

department at the Hood Rubber Company.

Going back a little further, on September 7, Joan Stevens and Jim Davidson (middle initial is J) were married in Augusta, Maine; Jim has a job as an electrical engineer with the Radio Corporation of America in Indianapolis, Ind. Lydia Cloward and Art Heinzman, whose engagement was mentioned in the last issue of *The Technology Review*, were married in Wilmington, Del., on July 26; they have settled down as new citizens of Aiken, S.C. (I suspect that this piece of news came via pony express.)

Wollaston, Mass., saw the wedding of Jessie McCray and Bill Hey on September 6; the Heys have decided that fair city is good enough for them while Bill remains a staff engineer at the Institute. Mary Ellen Conway and Ed Matthews were married in Staten Island, N.Y., on August 11; by this time Ed has given up his civilian status for the Air Force. Lieutenant Matthews reported to Lowry Field in Denver, Colo.

In the local news were the names of Flo Tamburro and Cliff Morse, who were married on September 11 in the fair city of Cambridge, Mass.; Flo, as most of you probably remember, was the belle of the A.A. Cliff is now serving as a second lieutenant at Fort Monmouth. Eleanor Reynolds and Rudy Preisendorfer joined forces on September 3 in East Walpole, Long Island.

Joanna Laird and Dick Semple were wed in Rochester, N.Y., on September 6; Dick is returning to M.I.T. to work for his master's degree. Oh, yes; I almost forgot the letter I received yesterday from Chuck Bethel. He was married to Martha Cruise in Clarksburg, W.Va., on September 3. They've settled down in St. Louis, Mo., where Chuck is working for Mallinckrodt Chemical Works. He writes of his job: "I am now in the brand-new Development Department. My first work here has been on preliminary market studies, with each one being somewhat the length of our old 'product reports' in marketing."

Bill Dunn showed up here at Fort McClellan sporting a brand-new wife. He and Emily Cooper were married in Warren, Ohio, back in July.

And now to complete our tour of the country. Clyde Baker, I, is now working for the Oregon State Highway Department. The sunny state of California has a large number of '52ers: Cliff Heselton,

I, at Lockheed in Burbank; Emil Volcheck, V, at the University of California in Berkeley; Charlie Wilcox, V, at UCLA in Los Angeles; Ed Cole, VI, at Hughes Aircraft in Culver City; John Kadyk, VI, at Douglas Aircraft in Santa Monica; Stan Logue, VI-A, at Convair in San Diego; Jim Reese, VI, at the Fluor Corporation in Los Angeles; Fausto Taddeo, VI, at Hughes Aircraft in Culver City; Dan Anderson, VIII, also at Hughes Aircraft in Culver City; Paul Kuhns, VIII, at Hughes Aircraft in Culver City; Marty Levin, XIV, at Stanford in Palo Alto; Dick Jankowski, XVI, at Consolidated Vultee at San Diego; and Rudy Preisendorfer, XVIII, at UCLA in Los Angeles.

We next come to Texas: Jim Arbogast, VIII, is with the Texas Company in Belaire just outside Houston; Joe Moore, X, is working for the Humble Oil and Refining Company in Baytown; Cliff Sayre, X, is with Du Pont Polychemicals in Victoria. In nearby Louisiana, are Gerry Laufs, X, with Esso Standard Oil in Baton Rouge, and John Small, XII, with the California Company in New Orleans.

In Tennessee are the following: Bob Brodsky, VIII, Dave Eissenberg, X, John Crowe, X, with Union Carbide and Carbon in Oak Ridge, and Dick Rand, XV, with ARO, Inc., in Tullahoma. Sid Byrum, XVII, is working for the Byrum Construction Company in Wheeling, W.Va. Bill Moss, XV, is attending the Institute of Textile Technology in Charlottesville. Course XV dominates the Delaware scene with Bob Couillard with Du Pont in Seaford, Walt Harmon with International Latex in Dover, and Art Howard with the General Chemicals Division of Allied Chemical and Dye in North Claymont. In the nation's capital are Hiram Pearlman, I, with the Bureau of Public Records, Allan Tanner, XII, with the U.S. Geological Survey, and Dana Ferguson, XIV, with the Naval Research Laboratory. Going out of the United States are Jay Fleishman, IV-A, and John Myer, IV-A. Both are going to Italy on Fulbright scholarships. Dave Ulrich, X, is in Peru with the International Petroleum Company; Rick Haegler, II, is with S. A. Haegler in Switzerland; Luis Capendeguy, II, is with Industria Lanera del Uruguay in Uruguay; and Neil Mactaggart, XVII, will be working for himself in the Bahamas.

Well, here is the news about that distinguished group of gentlemen who are giving their all for their country—those

who are in the Army, Navy, and Air Force. We'll cover the Army first, and, to be more explicit, the Chemical Corps. Us'ns here at Fort McClellan have plenty of company, 18 in all, attending the Chemical Corps School. We've even had our own junior reunion and dinner at the Officers' Club. Here is the motley list: George Krusen '50; George Benson '51; Vern Kenney '51; Knip Knipmeyer '51; Nate Lieberman '51; John Morgenthaler '51; and from our Class, John Camp, Bill Chandler, Bob Damon, Bill Dunn, Fitzzy Fitzgerald, Lou Karvelas, Steve Learnard, Sam Mitchell, Neil Panzier, Dirk Plummer, Sheldon Thorpe, and yours truly.

The following are at Fort Belvoir with the Engineers: Chuck Carter, John Clemens, Chuck Proctor, Jim Strawn, Frank Wheby, and undoubtedly others whose names I know not. The Class of 1952 is represented at Fort Lee, Virginia, by Jack Copenhefer, Harvey Eisenberg, Arnie A. Kramer, Ed Olney, Dave Weber, Ed Weisman, Gino Scalamantré, Sarkis Zartarian, and George Zavalakes. The only news I have about the Ordnance Corps School at Aberdeen, Md., is that George Friedensohn, Al Kandel, and Mike Sappupo are now gracing the premises there. Fort Monmouth, New Jersey, has both Signal Corps and A.S.A. personnel—Phil Crimmins, Larry Krivit, Ed Gulachenski, Cliff Morse, and Paul Seever.

The boys in blue from the Air Force make up a substantial bloc of the Class. Since I don't know where they are stationed, all I can do is list them: Howie Anderson, Walt Beckett, Neil Curlee, Bruce Curry, Bob Doane, Bob Gaudin, Taj Hanna, Vic Horlick, Sandy Isaacs, Tom Jannsen, Dave Link, Mike Lubin, Ed Matthews, Bill McKinley, Brian Moore, Bill Nicholson, Ed Ort, Bob Pfaff, Ed Porter, Gus Rath, Ralph Raynard, Phil Schirm, Bob Schwanhauser, Ed Selig, Al Sevcik, Ed Shea, Herm Smotrich, Don Sontag, Jim Stockwell, and John Wallis.

Ken Bohlin was recently given a commission in the Navy and has been assigned to the Ordnance Department in Washington, D.C.

It's time for me to pack my tent and silently steal away. Please write to me if anything of any type of interest has happened to you or if you notice any errors in the column. On behalf of myself and Bob Briber I should like to wish you all a very Merry Christmas and a very Happy New Year.—STANLEY I. BUCHIN, Secretary, 150 Tryon Avenue, Englewood, N.J.

A Holiday Greeting To Alumni



'Twas the night before Christmas, when, at M. I. T.,
Not a creature was stirring that our eyes could see.
Class notes had been sent to The Tech Review, where
Alumni would turn, for the news that was there.
The loyal class scribes--and club counterparts too--
Had finished the tasks they'd elected to do,
When out on the campus there shone such a light,
Jim Killian peered out to be sure things were right.
The Spirit of Tech, dressed in card'nal and gray,
With the Spirit of Christmas, was holding full sway.
"You know," said Tech Spirit, "'tis such a great deed
[In keeping Alumni from going to seed]
These writers are doing, that I'd like to say--
With all of the emphasis with which I may--
Good fortune we have, in the service they give
That our spirits, throughout the whole world, may yet live."
Next the Spirit of Christmas took up the good word
And echoed the thoughts that, just then, he had heard:
"I venture to say, as you have in your way,
No job's better run--and at what rate of pay!--
Than the work that your scribes have so faithfully done
In keeping their classmates united as one."
Then the Spirit of Christmas and the Spirit of Tech
Locked arms with each other, as you might expect;
And both of them echoed the words--old, yet new:
"Merry Christmas to all, and a happy year, too."

— with apologies to Clement Clarke Moore

AND, SPEAKING OF CHRISTMAS



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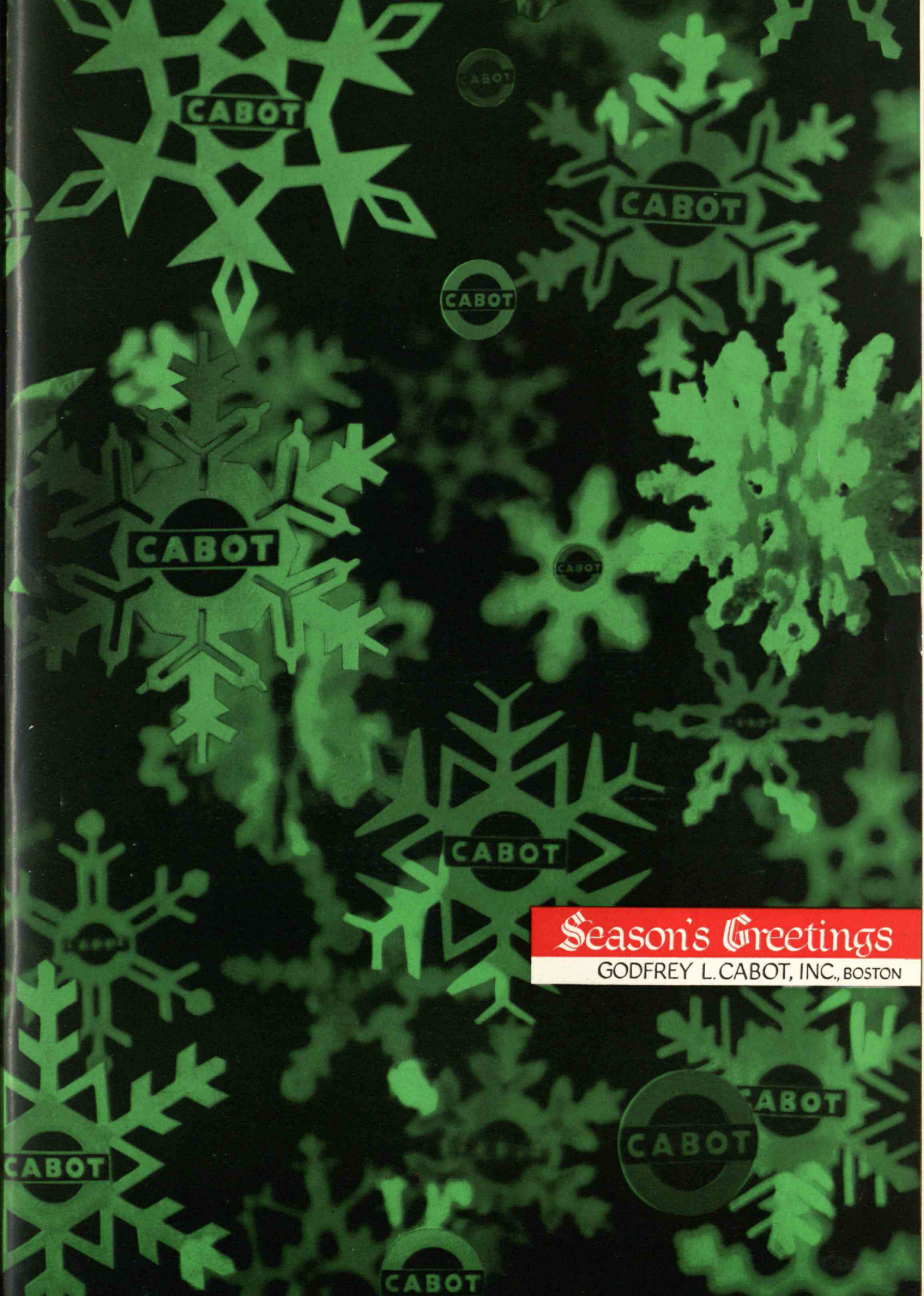
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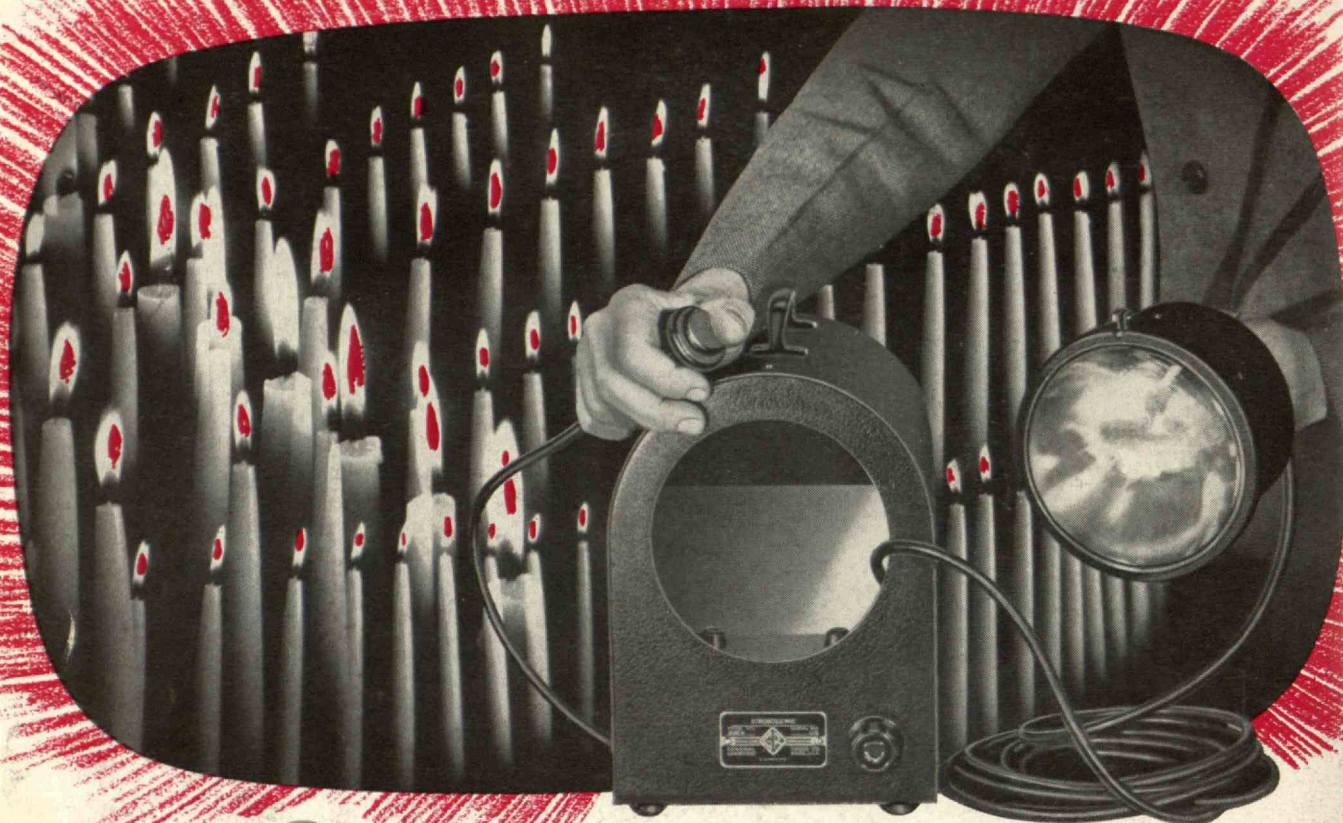
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